

**PETROLEUM
TESTING
SERVICE, INC.**

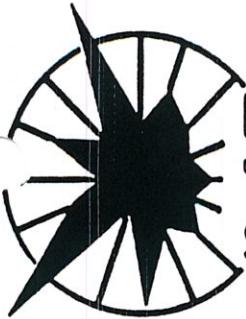
5880 DISTRICT BLVD., SUITE 1 • BAKERSFIELD, CA 93313
TELEPHONE (805) 835-0311

**CORE ANALYSIS REPORT
FOR**

**TEXACO REFINING & MARKETING INC.
RED RIBBON WD #2 (27-29S-27E)
FRUITVALE**

November 1991 FILE 82659

Reports submitted by Petroleum Testing Service are based on the analysis of materials and information supplied by the client, and cannot be guaranteed. These opinions and interpretations expressed represent our best judgement; however, Petroleum Testing Service assumes no responsibility nor makes any warranty regarding profits or performance resulting from the use of such reports.



**PETROLEUM
TESTING
SERVICE, INC.**

5880 DISTRICT BLVD., SUITE 1 • BAKERSFIELD, CA 93313
TELEPHONE (805) 835-0311

November 12, 1991

Joe Selgrath
Texaco Refining & Marketing Inc.
Post Office Box 1476
Bakersfield, CA 93302

Dear Mr. Selgrath:

Re: Sidewall Core Analysis
File No. 82659

Enclosed is the final report for routine core analysis performed on core material recovered from Red Ribbon WD #2; Fruitvale Field. For your reference, descriptions of the laboratory procedures have been included. Should you have any questions or comments, please call either David Mazzanti, District Manager, or Roy Burlingame, Regional Sales Representative, at the number listed above.

We appreciate the opportunity to be of service and trust these data will prove beneficial in the development of this reservoir.

Sincerely,

PETROLEUM TESTING SERVICE, INC.

David E. Mazzanti
cc: Peter T. Schuyler
President

PTS:jla

Encl.

PETROLEUM TESTING SERVICE, INC.

Client: Texaco Refining & Marketing Inc.

File No:
Date:

82659
November 13, 1991

Well:
Field:
State:

Red Ribbon WD #2
Fruitvale
California

SIDEWALL CORE ANALYSIS PROCEDURES

1. Trim samples of drilling mud and shape to right cylinders.
2. Package sample with preweighed aluminum foil wrap and fit with 200 mesh stainless steel end screens.
3. Seat package to the samples at 300 psig confining pressure.
4. Determine water and hydrocarbon saturation by Dean Stark analysis using toluene, (vacuum oven drying temperature 180 degrees F., oil gravity estimated at 20 degrees API).
5. Determine ambient porosity by toluene resaturation, Archimedes' principle.
6. Remove end screens and foil wrap from the competent samples. Measure air permeability at 300 psig confining pressure.
7. Report ambient porosity, air permeability at 300 psig, oil/water saturations, grain density, and sample descriptions.
8. Retain sidewall remains for a period of 90 days as reference.

PETROLEUM TESTING SERVICE, INC.

COMPANY : TEXACO REFINING & MARKETING INC.
 ORE TYPE: SCHLUMBERGER 1" SIDEWALL SAMPLES
 UD TYPE : WATER BASE
 ORMATION: N/A

WELL : RED RIBBON WD #2 (27-29S-27E) PAGE NO. : 1
 FIELD : FRUITVALE FILE NO.: 82659
 COUNTY: KERN DATE : NOVEMBER 12, 1991

SIDEWALL CORE ANALYSIS RESULTS

SAMPLE NUMBER	DEPTH ft	PERMEABILITY md	POROSITY %	SATURATION			GRAIN DENSITY g/cc	INCHES RECOVERED	COMMENTS	LITHOLOGICAL DESCRIPTION
				O/W RATIO	OIL (PERCENT PORE VOLUME)	WATER TOTAL				
S1	3790.00	79	26.7	0.1	3.9	66.8	70.7	2.67	1.25	Sst: lt brn, silt-vcrsd, mod cmtd, biot, s calc, fnt odor, lt stn, gld fluor
S2	3838.00	151	25.2	0.0	0.0	55.3	2.60		0.50	Sst: lt gry, silt-gran, mod cmtd, biot, no odor, no stn, no fluor
S3	3875.00	194	25.5	0.1	7.5	66.2	73.7	2.63	1.25	Sst: lt brn, silt-gran, mod cmtd, biot, fnt odor, lt stn, gld fluor
S4	3934.00	74	28.2	0.2	8.6	54.1	62.7	2.66	1.25	Sst: dk yelsh org, silt-vcrsd, mod cmtd, biot, s calc, fnt odor, lt stn, gld fluor
S5	3950.00	128	26.5	0.1	6.6	62.0	68.6	2.64	1.25	Sst: lt brn, silt-vcrsd, mod cmtd, biot, fnt odor, lt stn, gld fluor
S6	4079.00	233	27.1	0.2	14.7	64.0	78.7	2.65	1.25	Sst: brn, silt-vcrsd, mod cmtd, biot, fnt odor, lt stn, gld fluor
S7	4130.00	302	25.8	0.1	9.4	66.4	75.8	2.63	1.00	Sst: brn, silt-gran, mod cmtd, biot, fnt odor, lt stn, gld fluor

PETROLEUM TESTING SERVICE, INC.

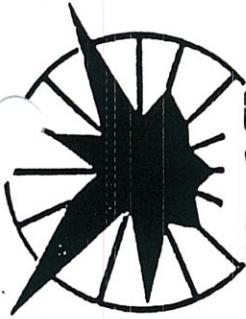
COMPANY : TEXACO REFINING & MARKETING INC.
CORE TYPE: SCHLUMBERGER 1" SIDEWALL SAMPLES
MUD TYPE : WATER BASE
FORMATION: N/A

WELL : RED RIBBON WD #2 (27-29S-27E) PAGE : 2
FIELD : FRUITVALE FILE NO.: 82659
COUNTY: KERN DATE : NOVEMBER 12, 1991
STATE : CALIFORNIA

S I D E W A L L C O R E A N A L Y S I S R E S U L T S

These results must be used with caution. Sidewall samples are obtained by impact coring. This method can fracture hard formations, thereby possibly increasing the porosity and permeability. In soft formations, impact coring can compact the samples, resulting in decreased porosity and permeability.

Drilling mud may penetrate fractures and soft formations, thereby affecting the porosity, permeability, fluid saturation, grain density and cation exchange capacity results.



**PETROLEUM
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5880 DISTRICT BLVD., SUITE 1 • BAKERSFIELD, CA 93313

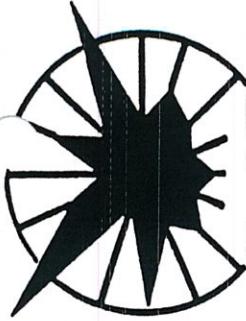
TELEPHONE (805) 835-0311

**CORE ANALYSIS REPORT
FOR**

**TEXACO REFINING & MARKETING, INC.
RED RIBBON WD #2
FRUITVALE**

December 1991 FILE 82656

Reports submitted by Petroleum Testing Service are based on the analysis of materials and information supplied by the client, and cannot be guaranteed. These opinions and interpretations expressed represent our best judgement; however, Petroleum Testing Service assumes no responsibility nor makes any warranty regarding profits or performance resulting from the use of such reports.



**PETROLEUM
TESTING
SERVICE, INC.**

5880 DISTRICT BLVD., SUITE 1 • BAKERSFIELD, CA 93313
TELEPHONE (805) 835-0311

January 3, 1992

Joe Selgrath
Texaco Refining & Marketing, Inc.
Post Office Box 1476
Bakersfield, CA 93302

Dear Mr. Selgrath:

**Re: Routine Core Analysis
File No. 82656**

Enclosed is the final report for routine core analysis performed on core material recovered from Red Ribbon WD #2, Fruitvale Field. For your reference, descriptions of the laboratory procedures have been included. Should you have any questions or comments, please call either David Mazzanti, District Manager, or Roy Burlingame, Regional Sales Representative, at the number listed above.

We appreciate the opportunity to be of service and trust these data will prove beneficial in the development of this reservoir.

Sincerely,

PETROLEUM TESTING SERVICE, INC.

David Mazzanti(ja)

for Peter T. Schuyler
President

PTS:ja

Encls

PETROLEUM TESTING SERVICE, INC.

Client: Texaco Refining & Marketing Inc.

File No:
Date:

82656 Page i
December 27, 1991

Well:
Field:
State:

Red Ribbon WD#2
Fruitvale
California

CORE ANALYSIS PROCEDURES

Core Handling

1. Perform wellsite services for approximately 320 feet of plastic sleeve core.
2. Chill core and transport to our Bakersfield, California laboratory.
3. Under the direction of Texaco Refining and Marketing Inc. representatives identify the two confining intervals by cutting a "window" in the plastic sleeve.
4. Correct core depths of the confining intervals to the log depths.
5. Drill vertically oriented one-inch diameter plug samples in the confining interval using a soft sediment drilling tool. Take plug samples at locations selected by Texaco Refining and Marketing Inc. representatives.
6. Slab the chilled confining intervals longitudinally into one-third/two-thirds sections using a horizontal band saw. Preserve the intervals in ProtecCore.
7. Freeze the injection intervals (all recovered material excluding the two confining intervals and the material directly above the confining intervals).
8. Slab the frozen injection intervals longitudinally into one-third/two-third sections using a horizontal band saw. Retain the interval in frozen storage.
9. Correct core depths of the injection intervals to the log depths.
10. Drill horizontally oriented one-inch diameter plug samples in the injection intervals using liquid nitrogen as the bit coolant. Take plug samples at locations selected by Texaco Refining and Marketing Inc. representatives.
11. Photograph the entire slabbed interval under white light in the composite format and photograph the confining intervals under white light in the half scale format.

Routine Core Analysis

12. Package samples with preweighed aluminum foil wrap and fit with 200 mesh stainless steel end screens.

PETROLEUM TESTING SERVICE, INC.

Client: Texaco Refining & Marketing Inc.

File No: 82656 Page ii
Date: December 27, 1991

Well: Red Ribbon WD#2
Field: Fruitvale
State: California

CORE ANALYSIS PROCEDURES

Routine Core Analysis

13. Seat packaging to the chilled confining interval samples and the frozen injection interval samples at the 300 psig.
14. Determine water and hydrocarbon saturation by Dean Stark analysis using toluene, (vacuum oven drying temperature 180 degrees F., oil gravity estimated at 13 degrees API).
15. Determine grain volume by Boyle's Law in a matrix cup.
16. Load samples into a hydrostatic pressure cell at confining pressures determined by the following formula:
$$\text{Net Stress} = \text{Depth(ft)} \times 0.567 \text{psi/ft}$$
17. Determine Boyle's Law pore volume and air permeability.
18. Describe samples from plug residuals and end clippings.
19. Report porosity, air permeability, oil/water saturations, grain density, and sample descriptions.

PETROLEUM TESTING SERVICE, INC.

COMPANY : TEXACO REFINING & MARKETING, INC.
 WELL : RED RIBBON WD #2
 FIELD : FRUITVALE
 COUNTY: KERN
 STATE : CALIFORNIA

PAGE : 1
 FILE NO.: 82656
 DATE : JANUARY 03, 1992

CONVENTIONAL CORE ANALYSIS RESULTS

SAMPLE NUMBER	DEPTH ft	HORIZONTAL md	VERTICAL md	POROSITY %	SATURATION			GRAIN DENSITY g/cc	COMMENTS	LITHOLOGICAL DESCRIPTION
					O/W RATIO	WATER (PERCENT PORE VOLUME)	TOTAL			
1V	3278.80			3.4*	28.6	0.0	74.3	2.64	*Fractured Ka	Sltst: gry, cl-slt, mod cmtd, biot, s calc, no odor, no stn, no fluor
2V	3281.00			7.9*	28.3	0.0	74.0	2.68	*Fractured Ka	Sltst: gry, cl-slt, mod cmtd, biot, no odor, no stn, no fluor
3V	3290.50			7.9*	36.4	0.0	82.4	2.70	*Fractured Ka	Sltst: gry, cl-vfsd, mod cmtd, biot, no odor, no stn, no fluor
4	3302.40	3620		32.4	0.0	0.0	68.6	2.65		Sst: lt gry, silt-ersd, prly-mod cmtd, biot, no odor, no stn, no fluor
5	3313.50	1600		27.1	0.0	0.0	107.3	2.64		Sst: lt gry, silt-vcrsd, prly-mod cmtd, biot, no odor, no stn, no fluor
6	3327.50	1580		27.3	0.0	0.0	114	113.5	2.63	Sst: lt gry, silt-vcrsd, prly-mod cmtd, biot, no odor, no stn, no fluor
7	3351.90	2910		24.9	0.0	0.0	78.7	78.7	2.62	Sltst: gry, silt-gran, prly-mod cmtd, biot, no odor, no stn, no fluor
8V	4696.10			3.0*	25.0	0.0	91.8	91.8	2.68	*Fractured Ka
9V	4699.30			3.2*	28.4	0.0	68.4	68.4	2.71	*Fractured Ka
										Sst: gry, cl-fsd w/ cl-slt incl, mod cmtd, biot, no odor, no stn, no fluor

PETROLEUM TESTING SERVICE, INC.

PARTY : TEXACO REFINING & MARKETING, INC.
 PIPE TYPE: 5 1/4" PVC
 JOINT TYPE : WATER BASE
 INFORMATION: N/A

WELL : RED RIBBON WD #2
 FIELD : FRUITVALE
 COUNTY: KERN
 STATE : CALIFORNIA

CONVENTIONAL CORE ANALYSIS RESULTS

AMPLE NUMBER	DEPTH ft	HORIZONTAL md	VERTICAL md	POROSITY %	O/W RATIO	SATURATION OIL (PERCENT PORE VOLUME)	GRAIN DENSITY g/cc	COMMENTS	LITHOLOGICAL DESCRIPTION	
10V	4701.60							Failed		
11	4711.50	3970		25.9	0.0	0.0	63.6	63.6	2.65	Sst: lt gry, silt-pbb, prly cmtd, biot, no odor, no stn, no fluor
12	4722.60	2920		23.6	0.0	0.0	91.6	91.6	2.62	Sst: lt gry, silt-gran, prly-mod cmtd, biot, no odor, no stn, no fluor
13	4731.50	413		28.3	0.0	0.0	98.4	98.4	2.71	Sst: lt gry, silt-msd, prly-mod cmtd, biot, no odor, no stn, no fluor
14	4738.10	2150		24.5	0.0	0.0	73.2	73.2	2.67	Sst: lt gry, silt-gran, prly cmtd, biot, no odor, no stn, no fluor
15	4846.60	1000		24.8	0.0	0.0	107	106.9	2.63	Sst: lt gry, silt-gran, prly cmtd, biot, no odor, no stn, no fluor
16	4863.40	4620		24.7	0.0	0.0	100	100.3	2.64	Sst: lt gry, silt-gran, prly cmtd, biot, no odor, no stn, no fluor
17	5013.90	1590		28.8	0.0	0.0	92.8	92.8	2.66	Sst: lt gry, silt-crstd, prly cmtd, biot, no odor, no stn, no fluor
18	5023.00	617		28.4	0.0	0.0	81.9	81.9	2.69	Sst: lt gry, silt-msd, prly-mod cmtd, biot, no odor, no stn, no fluor

PETROLEUM TESTING SERVICE, INC.

COMPANY : TEXACO REFINING & MARKETING, INC.
ORE TYPE: 5 1/4" PVC
UD TYPE : WATER BASE
ORMATION: N/A

WELL : RED RIBBON WD #2
FIELD : FRUITVALE
COUNTY: KERN
STATE : CALIFORNIA

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FILE NO.: 82656
DATE : JANUARY 03, 1992

CONVENTIONAL CORE ANALYSIS RESULTS

SAMPLE NUMBER	DEPTH ft	HORIZONTAL md	VERTICAL md	PERMEABILITY			SATURATION			GRAIN DENSITY g/cc	LITHOLOGICAL DESCRIPTION
				POROSITY %	O/W RATIO	TOTAL (PERCENT PORE VOLUME)	WATER	COMMENTS			
19	5030.10	4520		25.2	0.0	0.0	71.5	71.5	2.68	Sst: lt gry, silt-gran, prly cmtd, biot, no odor, no stn, no fluor	

PETROLEUM TESTING SERVICE, INC.

COMPANY : TEXACO REFINING & MARKETING, INC.
CORE TYPE: 5 1/4" PVC
MUD TYPE : WATER BASE
FORMATION: N/A

FILE NO.: 82656
DATE : JANUARY 03, 1992

WELL : RED RIBBON WD #2
FIELD : FRUITVALE
COUNTY : KERN
STATE : CALIFORNIA

S U M M A R Y O F C O R E A N A L Y S I S D A T A

FORMATION AND RANGE DATA

Formation:

Top Depth 3278.80 ft
Bottom Depth 5030.10 ft
Number Of Samples 19

Formation:

Number Of Samples 13
Thickness Represented 1751.30 ft
19

Porosity:

	Minimum	Maximum	Arithmetic Mean	Median
Number Of Samples	13	1751.30 ft	1751.30 ft	1751.30 ft
Thickness Represented				
	23.6 %	32.4 %	26.6 %	25.9 %
Permeability	4.13 md	4.620 md	2420 md	1940 md
Geometric Mean				
Median				2150 md

Permeability:

	Minimum	Maximum	Arithmetic Mean	Geometric Mean
Permeability	4.13 md	4.620 md	2420 md	1940 md
Geometric Mean				
Median				2150 md

STATISTICS FOR SAMPLES REMAINING AFTER APPLYING EXCLUSION CRITERION

Range:

Porosity (Minimum) 0.0 %
Porosity (Maximum) 100.0 %
Permeability (Minimum) 0.1 md
Permeability (Maximum) 10000.0 md
Saturation (Minimum) 0.0 %
Saturation (Maximum) 100.0 %
Grain Density (Minimum) 2.0 g/cc
Grain Density (Maximum) 3.0 g/cc

Grain Density:

	Minimum	Maximum	Arithmetic Mean	Median
Number Of Samples	13	1751.30 ft	1751.30 ft	1751.30 ft
Thickness Represented				
	2.62 g/cc	2.71 g/cc	2.65 g/cc	2.65 g/cc
Average Saturations:	0.00 % P.V	85.5 % P.V		

Porosity:

	Minimum	Maximum	Arithmetic Mean	Median
Number Of Samples	13	1751.30 ft	1751.30 ft	1751.30 ft
Thickness Represented				
	23.6 %	32.4 %	26.6 %	25.9 %
Permeability	4.13 md	4.620 md	2420 md	1940 md
Geometric Mean				
Median				2150 md

Permeability:

	Minimum	Maximum	Arithmetic Mean	Geometric Mean
Permeability	4.13 md	4.620 md	2420 md	1940 md
Geometric Mean				
Median				2150 md

Average Saturations:

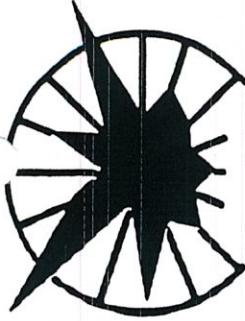
	Oil	Water
Average Saturations:	0.00 % P.V	85.5 % P.V

Exclusion Criterion:

> 10000 md - Reported As > 10000 md Samples Excluded 6
1000 - 9999.99 md - Rounded To Nearest 10 md Vertical Samples
10 - 999.99 md - Rounded To Nearest 1 md Side Wall Samples
0.1 - 9.99 md - Rounded To Nearest 0.1 md Samples With Permeabilities < 0.1 md
< 0.1 md - Reported As < 0.1 md Samples With Permeabilities > 10000 md

Miscellaneous Data

Type Of Extraction	Dean-Stark
Confining Stress	300 psi
Oil Gravity	20.0 °API



**PETROLEUM
TESTING
SERVICE, INC.**

12051 RIVERA RD. • SANTA FE SPRINGS, CA 90670-2289

TELEPHONE (310) 698-0081 • FAX (310) 693-0947

SAN JOAQUIN ENERGY CONSULTANTS, INC.

WELL: RED RIBBON WD-2

FIELD: FRUITVALE

SPECIFIC PERMEABILITY TESTS

DECEMBER 1991 FILE 82656

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**PETROLEUM
TESTING
SERVICE, INC.**

12051 RIVERA RD. • SANTA FE SPRINGS, CA 90670-2289

TELEPHONE (310) 698-0081 • FAX (310) 693-0947

December 30, 1991

Brad DeWitt
San Joaquin Energy Consultants, Inc.
1400 Easton Drive, Suite 133
Bakersfield, CA 93309

Dear Mr. DeWitt:

Re: Special Core Analysis
File No.: 82656

Enclosed is the final report for Specific Permeability Tests performed on sand and shale core material recovered from Well Red Ribbon WD-2, Fruitvale Field, California. A description of the laboratory procedure has been included for your reference. Should you have any questions or comments, please call Dave Mazzanti, District Manager at (805) 835-0311 or Pat Lasswell, Special Core Analysis Supervisor, at (310) 698-0081.

We appreciate the opportunity to be of service and trust these data will prove beneficial in the development of this reservoir.

Sincerely,

PETROLEUM TESTING SERVICE, INC.



Peter T. Schuyler
Peter T. Schuyler
President

PTS:em
Encl.

PETROLEUM TESTING SERVICE, INC.

File No.:

82656

Page 1

Date:

December 1991

Well:

Red Ribbon WD-2

Field:

Fruitvale

State:

California

Client: San Joaquin Energy Consultants, Inc.

SPECIFIC PERMEABILITY PROCEDURE

1. Cut 1" diameter by maximum length samples from bulk core material, cutting shale samples parallel to the core axis and perpendicular to any visible signs of bedding and sand samples perpendicular to the core axis and parallel to any visible signs of bedding, at locations selected by client.
2. Trim to form right cylinder and package with Teflon tape and stainless steel end screens, saving end butts for future analysis.
3. Confine at simulated reservoir stress and ambient temperature.
Simulated reservoir stress = Depth (ft) X 0.567 psi/ft
4. Prepare synthetic waste water using geochemical analyses of TRMI Waste water supplied by client. Filter to 0.45 micron and degas.
5. Flush with synthetic waste water at a rate not exceeding 0.50 cc/minute.
6. Determine specific brine permeability, K_w .
7. Remove from test cell and extract (Dean-Stark method) with toluene followed by methanol. Vacuum dry to stable weight.
8. Determine pore volume (Boyle's law method) using helium and permeability to air, K_a , at simulated reservoir stress. Determine grain volume (Boyle's law method) using helium.
9. Report results in millidarcys (permeability), and cm/sec (hydraulic conductivity).

REFERENCES:

EPA METHOD 9100, Hydraulic Conductivity, September, 1987.

API RP40, Recommended Practice for Core Analysis Procedure, 1960.

PETROLEUM TESTING SERVICE, INC.

File No.:

82656

Page 2

Date:

December 1991

Client: San Joaquin Energy
Consultants, Inc.

Well:

Red Ribbon WD-2

Field:

Fruitvale

State:

California

TABLE 1

SYNTHETIC WASTE WATER COMPOSITION DATA

<u>COMPOUND</u>	<u>mg/L</u>
SODIUM CHLORIDE	499.4
MAGNESIUM CHLORIDE	18.4
CALCIUM CHLORIDE	188.4
SODIUM SULFATE	783.6
POTASSIUM CHLORIDE	16.4

TABLE 2

SYNTHETIC BRINE VISCOSITY DATA

<u>FLUID</u>	<u>TEMPERATURE, °F</u>	<u>DENSITY, g/cc</u>	<u>VISCOSITY, cp</u>
WASTE WATER	73	1.005	0.972

PETROLEUM TESTING SERVICE, INC.

File No.:

82656

Pag

Date:

December 1991

Client: San Joaquin Energy
Consultants, Inc.

Well:

Red Ribbon WD-2

Field:

Fruitvale

State:

California

TABLE 3

POST TEST SHALE SAMPLE PROPERTIES
AT SIMULATED RESERVOIR STRESS @ 73°F

SAMPLE No.	DEPTH, ft	SIMULATED RESERVOIR STRESS, psi	GRAIN DENSITY, gm/cc	POROSITY, percent	AIR PERMEABILITY md
1	3278.80	1860	2.67	25.3	1.95
2	3281.00	1860	2.70	26.5	1.83
3	3290.50	1870	2.70	29.2	0.36
4	4696.10	2660	2.70	22.1	1.13
5	4699.30	2670	2.71	22.2	0.29
6	4701.60	2670	2.70	23.0	0.11

TABLE 4

POST TEST SAND SAMPLE PROPERTIES
AT SIMULATED RESERVOIR STRESS @ 73°F

SAMPLE No.	DEPTH, ft	SIMULATED RESERVOIR STRESS, psi	GRAIN DENSITY, gm/cc	POROSITY, percent	AIR PERMEABILITY md
1	3321.10	1880	2.66	23.0	8.78
2	3327.50	1890	2.63	26.6	2480
3	4717.50	2670	2.67	25.1	3050
4	5016.00	2840	2.68	28.8	1910

PETROLEUM TESTING SERVICE, INC.File No.: 82656
Date: December 1991

Page 3

Client: San Joaquin Energy
Consultants, Inc.Well: Red Ribbon WD-2
Field: Fruitvale
State: California**TABLE 3****POST TEST SHALE SAMPLE PROPERTIES
AT SIMULATED RESERVOIR STRESS @ 73°F**

<u>SAMPLE No.</u>	<u>DEPTH, ft</u>	<u>SIMULATED RESERVOIR STRESS, psi</u>	<u>GRAIN DENSITY, gm/cc</u>	<u>POROSITY, percent</u>	<u>AIR PERMEABILITY, md</u>
1	3278.80	1860	2.67	25.3	1.95
2	3281.00	1860	2.70	26.5	1.83
3	3290.50	1870	2.70	29.2	0.36
4	4696.10	2660	2.70	22.1	1.13
5	4699.30	2670	2.71	22.2	0.29
6	4701.60	2670	2.70	23.0	0.11

TABLE 4**POST TEST SAND SAMPLE PROPERTIES
AT SIMULATED RESERVOIR STRESS @ 73°F**

<u>SAMPLE No.</u>	<u>DEPTH, ft</u>	<u>SIMULATED RESERVOIR STRESS, psi</u>	<u>GRAIN DENSITY, gm/cc</u>	<u>POROSITY, percent</u>	<u>AIR PERMEABILITY, md</u>
1	3321.10	1880	2.66	23.0	8.78
2	3327.50	1890	2.63	26.6	2480
3	4717.50	2670	2.67	25.1	3050
4	5016.00	2840	2.68	28.8	1910

PETROLEUM TESTING SERVICE, INC.

File No.: 82656
Date: December 1991

Page 4

Client: San Joaquin Energy
Consultants, Inc.

Well: Red Ribbon WD-2
Field: Fruitvale
State: California

TABLE 5

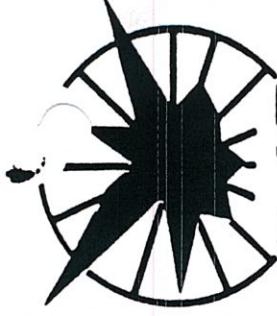
SHALE PERMEABILITY AND HYDRAULIC CONDUCTIVITY DATA
AT SIMULATED RESERVOIR STRESS @ 73°F

SAMPLE No.	DEPTH, ft	SIMULATED RESERVOIR STRESS, psi	SPECIFIC BRINE PERMEABILITY, md	HYDRAULIC CONDUCTIVITY, cm/sec
1	3278.80	1860	0.002	1.63 ⁻⁹
2	3281.00	1860	<0.001	7.50 ⁻¹¹
3	3290.50	1870	<0.001	2.54 ⁻¹¹
4	4696.10	2660	<0.001	2.99 ⁻¹¹
5	4699.30	2670	<0.001	4.77 ⁻¹¹
6	4701.60	2670	<0.001	1.62 ⁻¹¹

TABLE 6

SAND PERMEABILITY AND HYDRAULIC CONDUCTIVITY DATA
AT SIMULATED RESERVOIR STRESS @ 73°F

SAMPLE No.	DEPTH, ft	SIMULATED RESERVOIR STRESS, psi	SPECIFIC BRINE PERMEABILITY, md	HYDRAULIC CONDUCTIVITY, cm/sec
1	3321.10	1880	0.004	4.31 ⁻⁹
2	3327.50	1890	639	6.39 ⁻⁴
3	4717.50	2670	885	8.85 ⁻⁴
4	5016.00	2840	524	5.24 ⁻⁴



**PETROLEUM
TESTING
SERVICE, INC.**

12051 RIVERA RD. • SANTA FE SPRINGS, CA 90670-2289

TELEPHONE (310) 698-0081 • FAX (310) 693-0947

SAN JOAQUIN ENERGY CONSULTANTS, INC.

WELL: RED RIBBON WD-2

FIELD: FRUITVALE

RATE SENSITIVITY TESTS

DECEMBER 1991 FILE 82656

Reports submitted by Petroleum Testing Service are based on the analysis of materials and information supplied by the client, and cannot be guaranteed. These opinions and interpretations expressed represent our best judgement; however, Petroleum Testing Service assumes no responsibility nor makes any warranty regarding profits or performance resulting from the use of such reports.



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SERVICE, INC.**

12051 RIVERA RD. • SANTA FE SPRINGS, CA 90670-2289

TELEPHONE (310) 698-0081 • FAX (310) 693-0947

December 31, 1991

Brad DeWitt
San Joaquin Energy Consultants, Inc.
1400 Easton Drive, Suite 133
Bakersfield, CA 93309

Dear Mr. DeWitt:

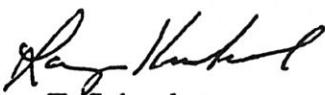
Re: Special Core Analysis
File No.: 82656

Enclosed is the final report for Rate Sensitivity Tests performed on core material recovered from Well Red Ribbon WD-2, Fruitvale Field, California. A description of the laboratory procedure has been included for your reference. Should you have any questions or comments, please call Dave Mazzanti, District Manager at (805) 835-0311 or Pat Lasswell, Special Core Analysis Supervisor, at (310) 698-0081.

We appreciate the opportunity to be of service and trust these data will prove beneficial in the development of this reservoir.

Sincerely,

PETROLEUM TESTING SERVICE, INC.


Peter T. Schuyler
President

PTS:em
Encl.

PETROLEUM TESTING SERVICE, INC.

File No.:

82656
December 1991

Page 1

Date:
Well:
Field:
State:

Red Ribbon WD-2
Fruitvale
California

Client: San Joaquin Energy Consultants, Inc.

RATE SENSITIVITY PROCEDURE

1. Cut 1" diameter by maximum length sand samples from bulk core material, perpendicular to the core axis and parallel to any visible signs of bedding, at locations selected by client.
2. Trim to form right cylinder and package with Teflon tape and stainless steel end screens, saving end butts for future analysis.
3. Confine at simulated reservoir stress and ambient temperature.

Simulated reservoir stress = Depth (ft) X 0.567 psi/ft
4. Prepare synthetic formation brine and waste water using geochemical analyses of Etchegoin Brine and TRMI Waste water supplied by client. Filter to 0.45 micron and degas.
5. Flush with synthetic formation brine at a rate of 0.50 cc/minute.
6. Determine specific brine permeability, Kw.
7. Displace synthetic formation brine with synthetic waste water at a rate of 0.50 cc/minute and monitor permeability as a function of pore volumes injected until values stabilize to within 5% change over two pore volumes injected.
8. Increase injection rate to 1.00 cc/minute and monitor permeability as a function of pore volumes injected until values stabilize to within 5% change over two pore volumes injected.
9. Repeat step 8 at rates of 2.00, 5.00, 10.0, and 20.0 cc/minute.
10. Remove from test cell and extract (Dean-Stark method) with toluene followed by methanol. Vacuum dry to stable weight.
11. Determine pore volume (Boyle's law method) using helium and permeability to air, Ka, at simulated reservoir stress. Determine grain volume (Boyle's law method) using helium.
12. Report sample properties, fluid data, and permeability data.

REFERENCES: EPA METHOD 9100, Hydraulic Conductivity, September, 1987.
 API RP40, Recommended Practice for Core Analysis Procedure, 1960.

PETROLEUM TESTING SERVICE, INC.

File No.: 82656
Date: December 1991

Page 2

Client: San Joaquin Energy
Consultants, Inc.

Well: Red Ribbon WD-2
Field: Fruitvale
State: California

TABLE 1
SYNTHETIC FORMATION BRINE COMPOSITION DATA

COMPOUND	mg/L
SODIUM CHLORIDE	1867.6
MAGNESIUM CHLORIDE	462.7
CALCIUM CHLORIDE	781.4
SODIUM SULFATE	17.7
POTASSIUM CHLORIDE	89.7

SYNTHETIC WASTE WATER COMPOSITION DATA

COMPOUND	mg/L
SODIUM CHLORIDE	499.4
MAGNESIUM CHLORIDE	18.4
CALCIUM CHLORIDE	188.4
SODIUM SULFATE	783.6
POTASSIUM CHLORIDE	16.4

TABLE 2
SYNTHETIC BRINE VISCOSITY DATA

FLUID	TEMPERATURE, °F	DENSITY, g/cc	VISCOSITY, cp
FORMATION BRINE	73	1.002	0.970
WASTE WATER	73	1.005	0.972

PETROLEUM TESTING SERVICE, INC.

File No.:

82656

Page 3

Date:

December 1991

Client: San Joaquin Energy
Consultants, Inc.

Well:

Red Ribbon WD-2

Field:

Fruitvale

State:

California

TABLE 3

POST TEST SAMPLE PROPERTIES
AT SIMULATED RESERVOIR STRESS @ 73°F

SAMPLE No.	DEPTH, ft	SIMULATED RESERVOIR STRESS, psi	GRAIN DENSITY, gm/cc	POROSITY, percent	AIR PERMEABILITY, md
1	3370.90	1910	2.66	26.8	2220
2	3374.50	1910	2.64	26.8	3950
3	4744.00	2690	2.64	25.8	3500
4	4833.50	2740	2.64	22.5	2290
5	5040.20	2860	2.65	20.9	3950

PETROLEUM TESTING SERVICE, INC.

File No.:

82656

Page 4

Date:

December 1991

Client: San Joaquin Energy
Consultants, Inc.

Well:

Red Ribbon WD-2

Field:

Fruitvale

State:

California

TABLE 4

MONITORED PERMEABILITY DATA

AT 1910 psi SIMULATED RESERVOIR STRESS AND 73°FSPECIFIC
WATER

SAMPLE No.	DEPTH, ft	FLUID ID	FLOW RATE, cc/min	PORE VOLUMES PRODUCED	PERMEABILITY, md
1	3370.90	SYNTHETIC FORMATION BRINE	0.5	21.6 22.6 24.8	776 774 790
		SYNTHETIC WASTE WATER	0.5	26.2 27.2 28.3 29.4 30.5 31.6 33.0 34.6 35.9 37.0 38.1	378 334 437 522 544 554 574 590 617 628 635
		SYNTHETIC WASTE WATER	1.0	39.1 41.3 45.4 49.7 54.0	792 792 832 847 848
		SYNTHETIC WASTE WATER	2.0	56.2 60.5 69.3 78.1 86.8	969 961 948 968 972

PETROLEUM TESTING SERVICE, INC.

File No.: 82656
Date: December 1991

Page 5

Client: San Joaquin Energy
Consultants, Inc.

Well: Red Ribbon WD-2
Field: Fruitvale
State: California

TABLE 4 (cont.)

MONITORED PERMEABILITY DATA

AT 1910 psi SIMULATED RESERVOIR STRESS AND 73°F

SPECIFIC
WATER

SAMPLE No.	DEPTH, ft	FLUID ID	FLOW RATE, cc/min	PORE VOLUMES PRODUCED	PERMEABILITY, md
1	3370.90	SYNTHETIC WASTE WATER	5.0	91.1 99.7 117 130 143 156 167	951 946 927 887 875 876 873
		SYNTHETIC WASTE WATER	10.0	175 193 227 244 261	771 792 809 810 813
		SYNTHETIC WASTE WATER	20.0	278 310 360 392 424 457 489 521 558	312 302 321 320 337 345 355 366 381

PETROLEUM TESTING SERVICE, INC.

File No.:

82656

Page 6

Date:

December 1991

Client: San Joaquin Energy
Consultants, Inc.Well: Red Ribbon WD-2
Field: Fruitvale
State: California

TABLE 5
MONITORED PERMEABILITY DATA

AT 1910 psi SIMULATED RESERVOIR STRESS AND 73°F

<u>SAMPLE No.</u>	<u>DEPTH, ft</u>	<u>FLUID ID</u>	<u>FLOW RATE, cc/min</u>	<u>PORE VOLUMES PRODUCED</u>	<u>SPECIFIC WATER PERMEABILITY, md</u>
2	3374.50	SYNTHETIC FORMATION BRINE	0.5	20.9 22.0 24.2	1510 1520 1520
		SYNTHETIC WASTE WATER	0.5	25.3 26.8 27.9 29.5 30.5 31.9	1450 1450 1460 1540 1580 1595
		SYNTHETIC WASTE WATER	1.0	33.0 34.1 36.3 38.5 42.0	2530 2430 2345 2300 2300
		SYNTHETIC WASTE WATER	2.0	44.4 46.8 51.2 55.8	2760 2620 2630 2590
		SYNTHETIC WASTE WATER	5.0	62.4 66.8 75.6 84.4 93.4 102 114	2695 2670 2630 2610 2660 2660 2670

PETROLEUM TESTING SERVICE, INC.

File No.: 82656
Date: December 1991

Page 7

Client: San Joaquin Energy
Consultants, Inc.

Well: Red Ribbon WD-2
Field: Fruitvale
State: California

TABLE 5 (cont.)

MONITORED PERMEABILITY DATA

AT 1910 psi SIMULATED RESERVOIR STRESS AND 73°F

SPECIFIC
WATER

SAMPLE No.	DEPTH, ft	FLUID ID	FLOW RATE, cc/min	PORE VOLUMES PRODUCED	PERMEABILITY, md
2	3374.50	SYNTHETIC WASTE WATER	10.0	123 133 150 168 186 204	2595 2470 2455 2410 2420 2410
		SYNTHETIC WASTE WATER	20.0	221 237 270 308 341 378	2040 2030 2030 2100 2120 2110

PETROLEUM TESTING SERVICE, INC.

File No.: 82656
Date: December 1991

Page 8

Client: San Joaquin Energy
Consultants, Inc.Well: Red Ribbon WD-2
Field: Fruitvale
State: CaliforniaTABLE 6
MONITORED PERMEABILITY DATAAT 2690 psi SIMULATED RESERVOIR STRESS AND 73°FSPECIFIC
WATER

SAMPLE No.	DEPTH, ft	FLUID ID	FLOW RATE, cc/min	PORE VOLUMES PRODUCED	PERMEABILITY, md
3	4744.00	SYNTHETIC FORMATION BRINE	0.5	21.7	2675
				22.8	2680
				24.9	2670
		SYNTHETIC WASTE WATER	0.5	26.1	2600
				27.2	2280
				28.2	2210
				29.3	2200
		SYNTHETIC WASTE WATER	1.0	31.0	2840
				33.4	2560
				38.8	2470
				43.4	2425
				47.5	2410
		SYNTHETIC WASTE WATER	2.0	49.8	3460
				54.2	3430
				59.2	2640
				67.9	2160
				76.5	1920
				85.4	1525
				94.1	939
				103	797
				111	617
				121	506
				130	432
				138	364
				147	367

PETROLEUM TESTING SERVICE, INC.

File No.:

82656

Page 9

Date:

December 1991

Client: San Joaquin Energy
Consultants, Inc.

Well: Red Ribbon WD-2
Field: Fruitvale
State: California

TABLE 6 (cont.)

MONITORED PERMEABILITY DATA

AT 2690 psi SIMULATED RESERVOIR STRESS AND 73°F

SPECIFIC
WATER

SAMPLE No.	DEPTH, ft	FLUID ID	FLOW RATE, cc/min	PORE VOLUMES PRODUCED	PERMEABILITY, md
3	4744.00	SYNTHETIC WASTE WATER	5.0	151 160 177 190	593 612 611 610
		SYNTHETIC WASTE WATER	10.0	199 216 233 251 268 285 303 320 338 356 376 393 410 428	798 719 689 636 593 552 489 458 440 411 388 353 319 313
		SYNTHETIC WASTE WATER	20.0	444 466 498 531 563 596 631 663	458 458 436 408 381 362 345 330

PETROLEUM TESTING SERVICE, INC.

File No.: 82656 Page 10
Date: December 1991Client: San Joaquin Energy
Consultants, Inc.Well: Red Ribbon WD-2
Field: Fruitvale
State: California

TABLE 7
MONITORED PERMEABILITY DATA

AT 2740 psi SIMULATED RESERVOIR STRESS AND 73°F

SPECIFIC
WATER

SAMPLE No.	DEPTH, ft	FLUID ID	FLOW RATE, cc/min	PORE VOLUMES PRODUCED	PERMEABILITY, md
4	4833.50	SYNTHETIC FORMATION BRINE	0.5	20.8 22.1 24.7	705 704 705
		SYNTHETIC WASTE WATER	0.5	26.0 27.3 28.6 29.9 31.3	316 348 283 185 177
		SYNTHETIC WASTE WATER	1.0	33.9 36.5 39.1 41.7 44.3 46.9 49.5	361 439 551 560 589 614 626
		SYNTHETIC WASTE WATER	2.0	52.3 54.9 60.2 65.4 70.8 76.0 82.0	693 715 783 805 860 898 911
		SYNTHETIC WASTE WATER	5.0	87.2 97.7 108 119	933 892 908 902

PETROLEUM TESTING SERVICE, INC.

File No.: 82656
Date: December 1991

Page 11

Client: San Joaquin Energy
Consultants, Inc.

Well: Red Ribbon WD-2
Field: Fruitvale
State: California

TABLE 7 (cont.)

MONITORED PERMEABILITY DATA

AT 2740 psi SIMULATED RESERVOIR STRESS AND 73°F

SPECIFIC
WATER

SAMPLE No.	DEPTH, ft	FLUID ID	FLOW RATE, cc/min	PORE VOLUMES PRODUCED	PERMEABILITY, md
4	4833.50	SYNTHETIC WASTE WATER	10.0	129 139 160 181	854 843 848 844
		SYNTHETIC WASTE WATER	20.0	202 233 272 311 350	864 869 854 846 845

PETROLEUM TESTING SERVICE, INC.

File No.: 82656
Date: December 1991

Page 12

Client: San Joaquin Energy
Consultants, Inc.Well: Red Ribbon WD-2
Field: Fruitvale
State: California

TABLE 8
MONITORED PERMEABILITY DATA

AT 2860 psi SIMULATED RESERVOIR STRESS AND 73°F

SAMPLE No.	DEPTH, ft	FLUID ID	FLOW RATE, cc/min	PORE VOLUMES PRODUCED	SPECIFIC WATER PERMEABILITY, md
5	5040.20	SYNTHETIC FORMATION BRINE	0.5	25.4 26.9 29.9	81.1 81.1 81.1
		SYNTHETIC WASTE WATER	0.5	31.4 32.9 34.4 35.9 37.4 38.9	60.9 55.7 57.8 58.0 55.1 53.9
		SYNTHETIC WASTE WATER	1.0	41.0 44.0 47.0 50.3	60.0 54.9 49.5 49.4
		SYNTHETIC WASTE WATER	2.0	53.3 56.3 62.3 65.6	56.4 56.2 53.8 53.0
		SYNTHETIC WASTE WATER	5.0	71.9 77.8 89.8 102 114 126	59.7 54.0 50.3 46.9 45.0 43.5

PETROLEUM TESTING SERVICE, INC.

File No.: 82656

Page 13

Date: December 1991

Client: San Joaquin Energy
Consultants, Inc.

Well: Red Ribbon WD-2
Field: Fruitvale
State: California

TABLE 8 (cont.)

MONITORED PERMEABILITY DATA

AT 2860 psi SIMULATED RESERVOIR STRESS AND 73°F

SPECIFIC
WATER

SAMPLE No.	DEPTH, ft	FLUID ID	FLOW RATE, cc/min	PORE VOLUMES PRODUCED	PERMEABILITY, md
5	5040.20	SYNTHETIC WASTE WATER	10.0	138 151 175 199 223 247 271 295	52.9 46.8 44.9 42.8 42.0 41.4 40.2 40.7
		SYNTHETIC WASTE WATER	20.0	322 331 377 394 440	49.0 48.5 47.9 47.8 47.6

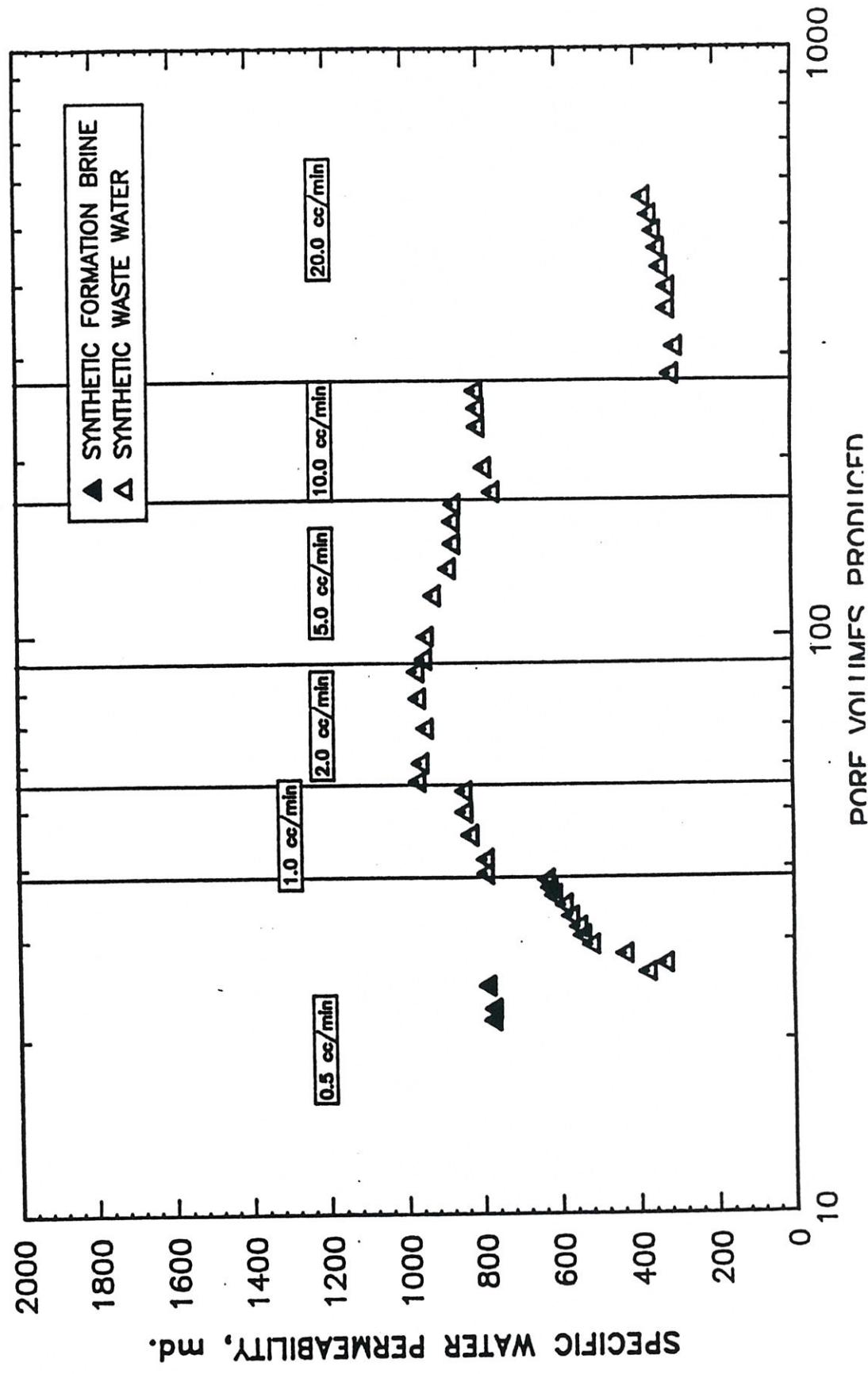
PETROLEUM TESTING SERVICE, INC.

File No.: 82656
Date: December 1991
Page 14

Well: Red Ribbon WD-2
Field: Fruitvale
State: California
Depth, ft.: 3370.90
Sample No.: 1

Client: San Joaquin Energy Consultants, Inc.

MONITORED PERMEABILITY
1910 psi SIMULATED RESERVOIR STRESS AND 73°F



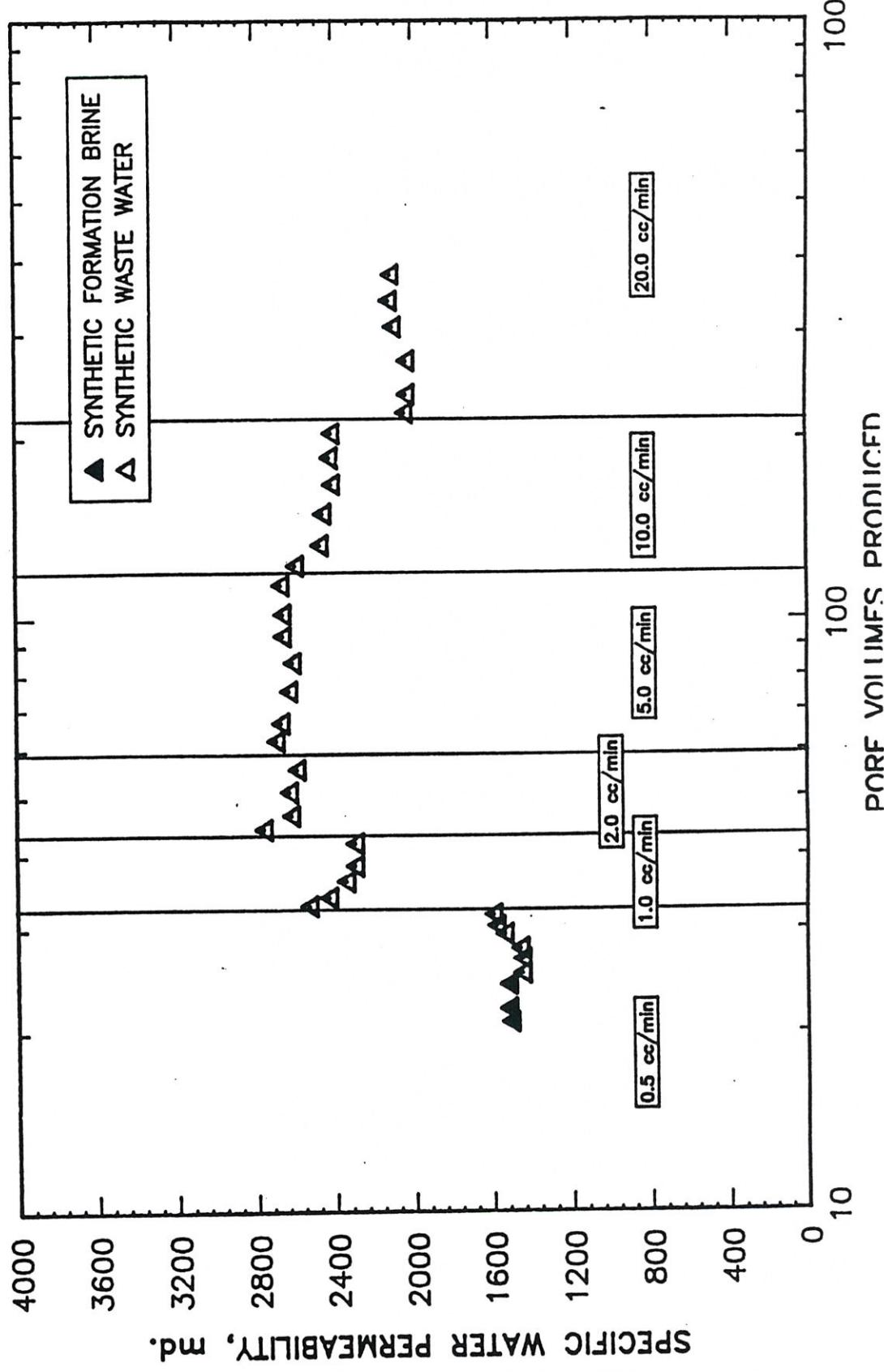
PETROLEUM TESTING SERVICE, INC.

File No.: 82656
Date: December 1991
Page 15
Figure 2

Well: Red Ribbon WD-2
Field: Fruitvale
State: California
Depth, ft.: 3374.50
Sample No.: 2

Client: San Joaquin Energy Consultants, Inc.

MONITORED PERMEABILITY
1910 psi SIMULATED RESERVOIR STRESS AND 73°F



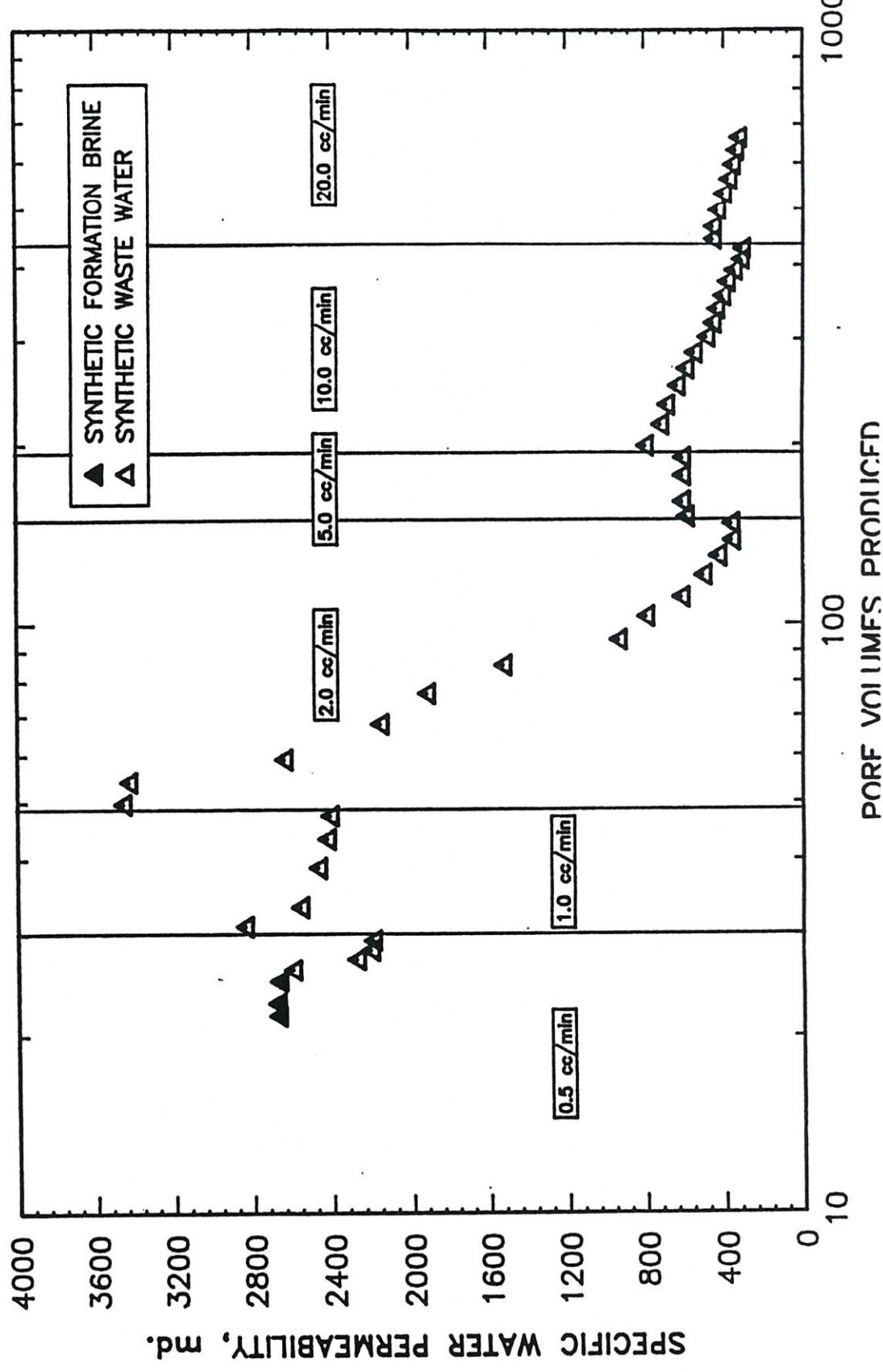
PETROLEUM TESTING SERVICE, INC.

File No.: 82656 Page 16
Date: December 1991 Figure 3

Well: Red Ribbon WD-2
Field: Fruitvale
State: California
Depth, ft.: 4744.00
Sample No.: 3

Client: San Joaquin Energy Consultants, Inc.

MONITORED PERMEABILITY
2690 psi SIMULATED RESERVOIR STRESS AND 73°F



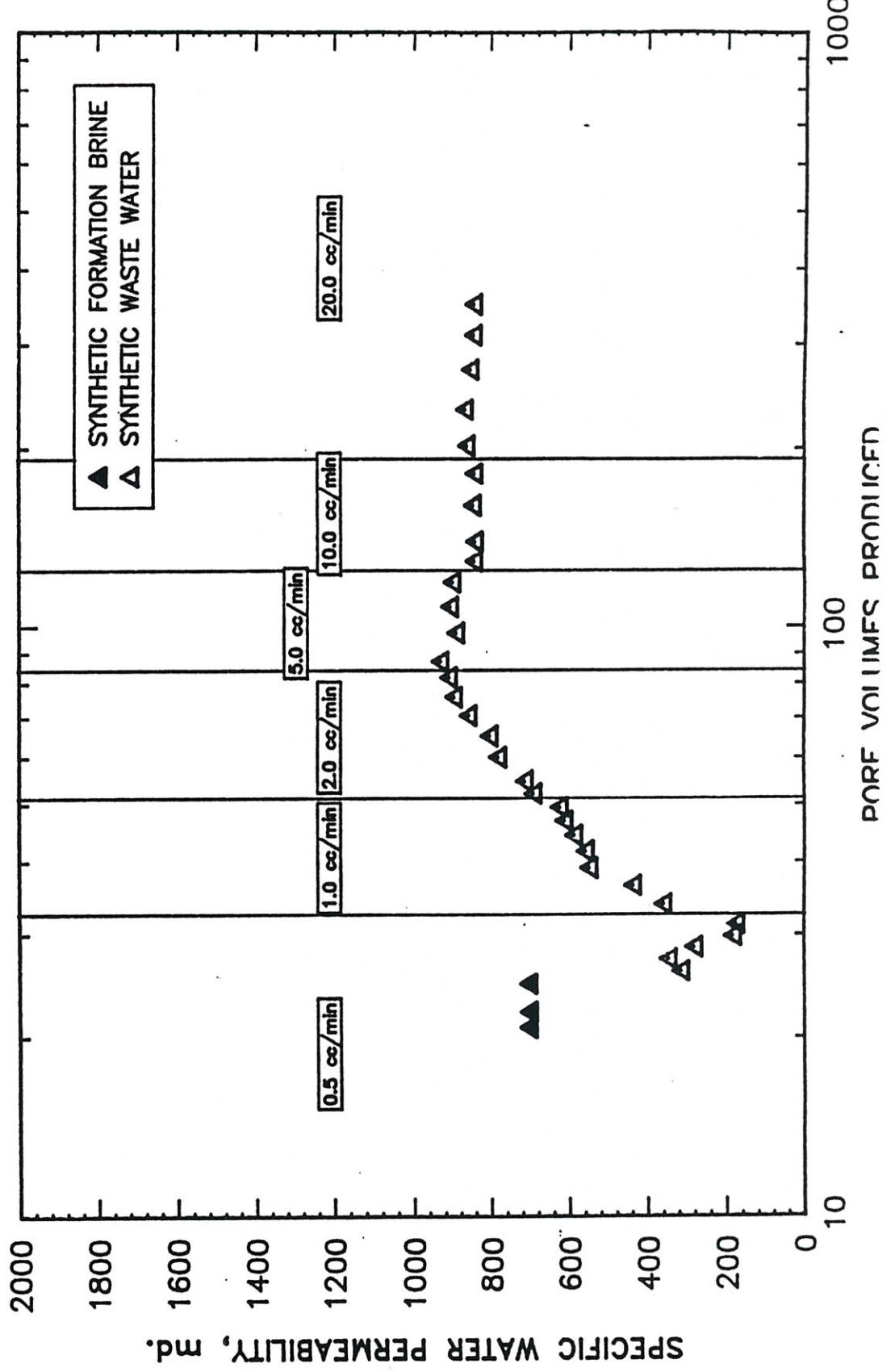
PETROLEUM TESTING SERVICE, INC.

File No.: 82656
Date: December 1991
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Well: Red Ribbon WD-2
Field: Fruitvale
State: California
Depth, ft.: 4833.50
Sample No.: 4

Client: San Joaquin Energy Consultants, Inc.

MONITORED PERMEABILITY
2740 psi SIMULATED RESERVOIR STRESS AND 73°F



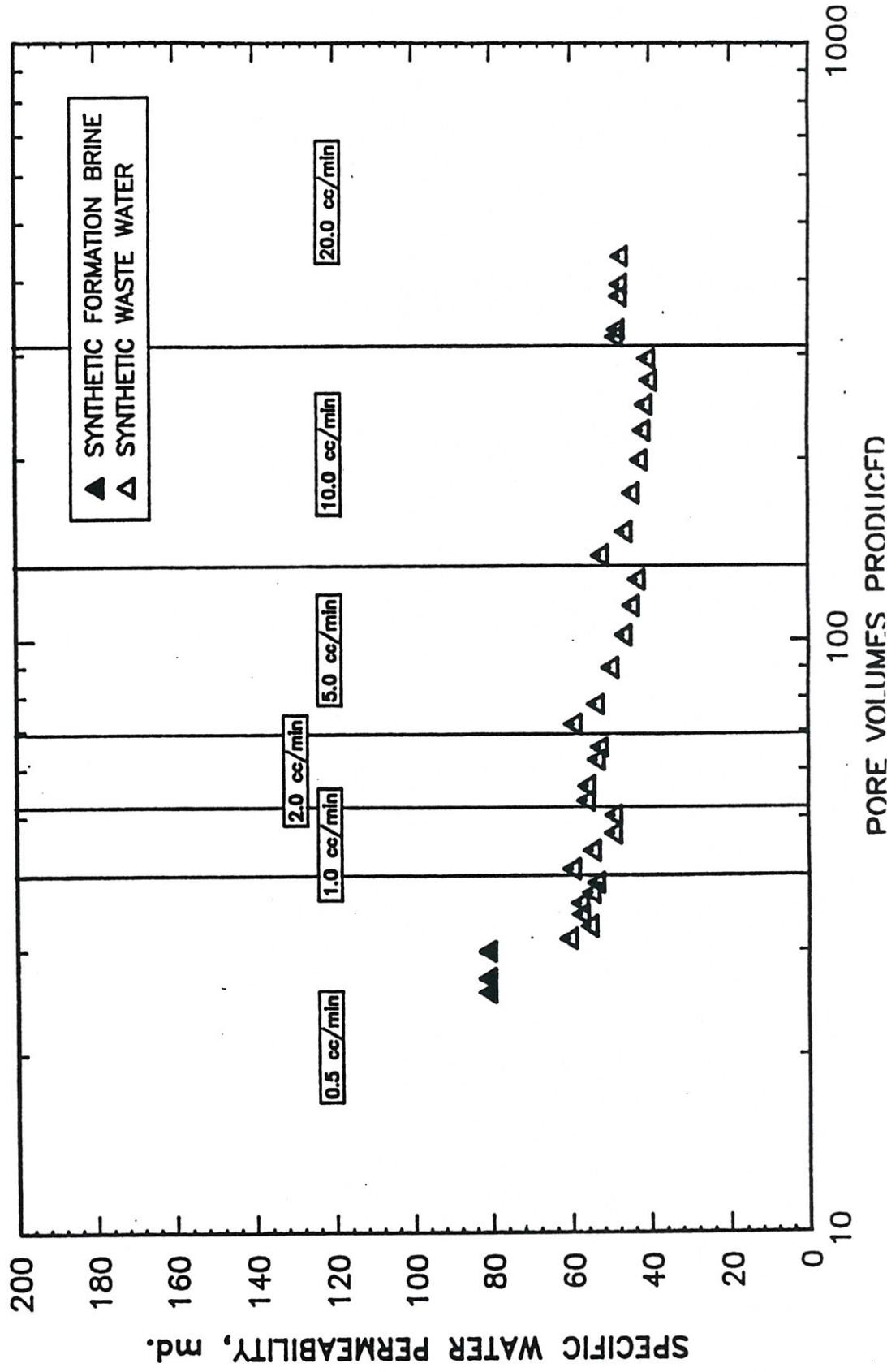
PETROLEUM TESTING SERVICE, INC.

File No.: 82656 Page 18
Date: December 1991 Figure 5

Well: Red Ribbon WD-2
Field: Fruitvale
State: California
Depth, ft.: 5040.20
Sample No.: 5

Client: San Joaquin Energy Consultants, Inc.

MONITORED PERMEABILITY
2860 psi SIMULATED RESERVOIR STRESS AND 73°F





12051 RIVERA RD. • SANTA FE SPRINGS, CA 90670-2289

TELEPHONE (310) 698-0081 • FAX (310) 693-0947

SAN JOAQUIN ENERGY CONSULTANTS, INC.

WELL: RED RIBBON WD-2

FIELD: FRUITVALE

CENTRIFUGAL CAPILLARY PRESSURE TESTS

DECEMBER 1991 FILE 82656

Reports submitted by Petroleum Testing Service are based on the analysis of materials and information supplied by the client, and cannot be guaranteed. These opinions and interpretations expressed represent our best judgement; however, Petroleum Testing Service assumes no responsibility nor makes any warranty regarding profits or performance resulting from the use of such reports.



**PETROLEUM
TESTING
SERVICE, INC.**

12051 RIVERA RD. • SANTA FE SPRINGS, CA 90670-2289

TELEPHONE (310) 698-0081 • FAX (310) 693-0947

December 30, 1991

Brad DeWitt
San Joaquin Energy Consultants, Inc.
1400 Easton Drive, Suite 133
Bakersfield, CA 93309

Dear Mr. DeWitt:

Re: Special Core Analysis
File No.: 82656

Enclosed is the final report for Centrifugal Capillary Pressure Tests performed on core material recovered from Well Red Ribbon WD-2, Fruitvale Field, California. A description of the laboratory procedure has been included for your reference. Should you have any questions or comments, please call Dave Mazzanti, District Manager at (805) 835-0311 or Pat Lasswell, Special Core Analysis Supervisor, at (310) 698-0081.

We appreciate the opportunity to be of service and trust these data will prove beneficial in the development of this reservoir.

Sincerely,

PETROLEUM TESTING SERVICE, INC.

P. T. Schuyler
Peter T. Schuyler
President

PTS:sa
Encl.

PETROLEUM TESTING SERVICE, INC.

Client: San Joaquin Energy Consultants, Inc.

File No.:

Date:

82656

December 1991

Page 1

Well:

Field:

State:

Red Ribbon WD-2

Fruitvale

California

CENTRIFUGAL CAPILLARY PRESSURE PROCEDURE

1. Cut 1" diameter by maximum length samples from bulk core material, parallel to the core axis and perpendicular to any visible signs of bedding, at locations selected by client.
2. Trim to form right cylinder and package with Teflon tape and Inconel end screens, saving end butts for future analysis.
3. Prepare synthetic waste water using geochemical analyses of TRMI Waste water supplied by client. Filter to 0.45 micron and degas.
4. Vacuum saturate samples with synthetic waste water. Hydrostatically pressurize at 900 psi to insure complete saturation.
5. Load into ultra-centrifuge drainage cups and using air as the displacing phase, run a multi-point drainage curve at ambient temperature. Record volume of brine displaced at each pressure point.
6. Remove from centrifuge and extract (Dean-Stark method) with toluene followed by methanol. Vacuum dry to stable weight.
7. Determine routine sample properties using Archimedes' method. Determine permeability to air, K_a , at 300 psi stress.
8. Convert all displacement volumes to average brine saturation percentages. Plot capillary pressure curves.
9. Smooth brine saturation data using a least-squares curve fit and calculate pressure saturation functions.
10. Use the final pressure point to perform Hassler function. Plot Hasslerized capillary pressure curves. (G.L. Hassler, Petroleum Technology, March, 1945).

PETROLEUM TESTING SERVICE, INC.

File No.: 82656
 Date: December 1991

Page 2

Client: San Joaquin Energy
 Consultants, Inc.

Well: Red Ribbon WD-2
 Field: Fruitvale
 State: California

TABLE 1

ROUTINE SHALE SAMPLE PROPERTIES
 POST TEST

<u>SAMPLE No.</u>	<u>DEPTH, feet</u>	<u>ARCHIMEDES'</u>			<u>AIR PERMEABILITY, md</u>
		<u>PORE VOLUME, cc</u>	<u>BULK VOLUME, cc</u>	<u>POROSITY, percent</u>	
1CP	3278.80	3.77	11.44	33.0	9.0
2CP	3281.00	3.70	9.97	37.1	325
3CP	3290.50	3.51	9.45	37.1	22.5
4CP	4696.10	3.29	10.52	31.3	275
5CP	4699.30	3.21	10.44	30.8	42.6
6CP	4701.20	3.17	10.55	30.1	74.5

TABLE 2

SYNTHETIC WASTE WATER DATA

COMPOSITION

<u>COMPOUND</u>	<u>mg/l</u>
SODIUM CHLORIDE	499.4
MAGNESIUM CHLORIDE	18.4
CALCIUM CHLORIDE	188.4
SODIUM SULFATE	783.6
POTASSIUM CHLORIDE	16.4

DENSITY

Density = 1.005 g/cc @ 73°F

PETROLEUM TESTING SERVICE, INC.

File No.: 82656
Date: December 1991

Page 3

Client: San Joaquin Energy
Consultants, Inc.Well: Red Ribbon WD-2
Field: Fruitvale
State: California

TABLE 3

CENTRIFUGAL CAPILLARY PRESSURE
AIR-BRINE SYSTEM @ 73°F

SAMPLE NUMBER	DEPTH, feet	Rpm	CAPILLARY	AVERAGE	SMOOTHED	HASSLER
			PRESSURE, psi Pc	SATURATION, percent pore volume	BRINE SATURATION, percent pore volume	BRINE SATURATION, percent pore volume Sn
1CP	3278.80	0	0.0	95.5		
		625	1.1	93.4		
		884	2.2	87.3	88.6	83.1
		1250	4.3	83.8	84.8	79.6
		1653	7.5	81.7	81.9	76.8
		1976	10.8	81.5	80.1	75.2
		2795	21.5	78.8	76.8	72.0
		3952	43.0	75.1	73.5	69.0
		5229	75.3	71.1	71.0	66.6
		6249	108	68.2	69.5	65.1
2CP	3281.00	0	0.0	100.0		
		625	1.0	91.6		
		884	2.0	88.4	88.4	84.8
		1250	3.9	85.7	85.9	82.4
		1653	6.9	83.5	84.0	80.5
		1976	9.8	83.3	82.8	79.4
		2795	19.7	80.8	80.4	77.1
		3952	39.3	78.4	78.2	75.0
		5229	68.9	76.2	76.4	73.3
		6249	98.4	75.2	75.3	72.2
3CP	3290.50	0	0.0	100.0		
		625	0.9	94.6		
		884	1.8	92.6	93.0	90.0
		1250	3.6	90.3	90.9	88.0
		1653	6.4	89.8	89.3	86.4
		1976	9.1	88.6	88.3	85.4
		2795	18.2	86.9	86.3	83.4
		3952	36.4	84.6	84.3	81.6
		5229	63.7	82.6	82.8	80.1
		6249	90.9	81.5	81.8	79.1

PETROLEUM TESTING SERVICE, INC.

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Date: December 1991

Client: San Joaquin Energy
Consultants, Inc.Well: Red Ribbon WD-2
Field: Fruitvale
State: California

TABLE 4

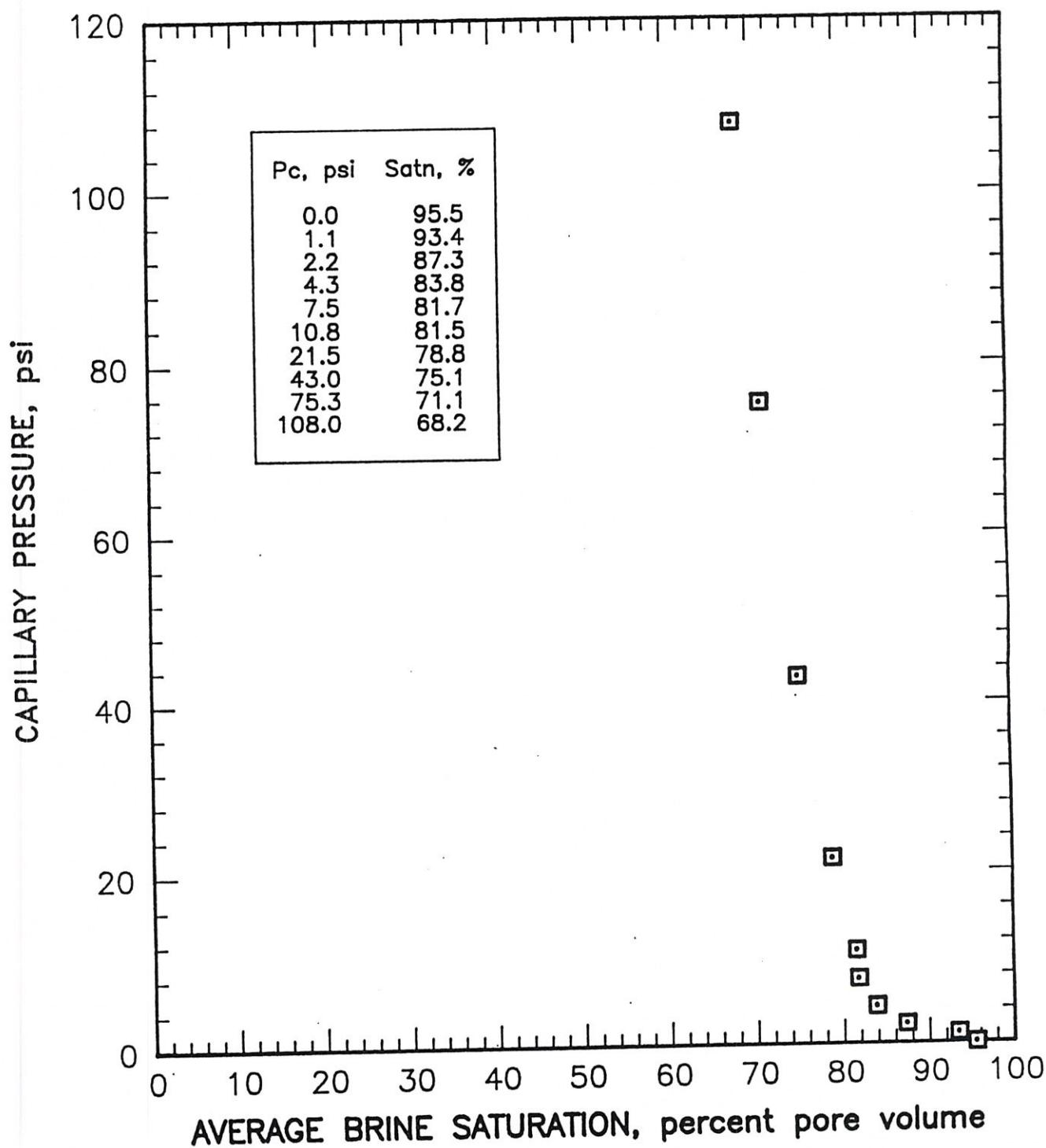
CENTRIFUGAL CAPILLARY PRESSURE
AIR-BRINE SYSTEM @ 73°F

SAMPLE NUMBER	DEPTH, feet	Rpm	CAPILLARY	AVERAGE	SMOOTHED	HASSLER
			PRESSURE, psi Pc	BRINE SATURATION, percent pore volume	BRINE SATURATION, percent pore volume	BRINE SATURATION, percent pore volume Sn
4CP	4696.10	0	0.0	99.7		
		625	1.0	99.4		
		884	2.0	95.8	97.1	1.95
		1250	4.0	92.7	93.2	3.74
		1653	7.0	90.3	90.2	6.33
		1976	10.0	89.7	88.3	8.86
		2795	20.1	86.0	84.7	17.01
		3952	40.2	81.8	81.3	32.64
		5229	70.3	78.4	78.6	55.28
		6249	100	76.3	77.0	77.29
5CP	4699.30	0	0.0	100.0		
		625	1.0	99.7		
		884	2.0	96.9		
		1250	4.0	92.9	92.9	3.73
		1653	7.0	89.8	90.6	6.36
		1976	10.0	89.4	89.1	8.94
		2795	20.1	86.9	86.3	17.33
		3952	40.2	84.1	83.6	33.57
		5229	70.3	81.0	81.5	57.29
		6249	100	80.1	80.2	80.50
6CP	4701.20	0	0.0	100.0		
		625	1.0	97.2		
		884	2.0	90.9	92.7	1.89
		1250	4.1	89.0	89.3	3.65
		1653	7.1	87.1	86.7	6.19
		1976	10.2	86.5	85.0	8.67
		2795	20.4	83.6	81.9	16.72
		3952	40.8	79.2	78.9	32.21
		5229	71.4	77.0	76.6	54.72
		6249	102	74.2	75.2	76.67
						71.1

Well: Red Ribbon WD-2
Field: Fruitvale
State: California
Depth: 3278.80 ft.

Sample No.: 1CP

Client: San Joaquin Energy Consultants, Inc.

CENTRIFUGAL CAPILLARY PRESSURE
AIR-BRINE SYSTEM @ 73°F
UNSMOOTHED DATA

PETROLEUM TESTING SERVICE, INC.

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Date:

December 1991

Figure 2

Well:

Red Ribbon WD-2

Field:

Fruitvale

State:

California

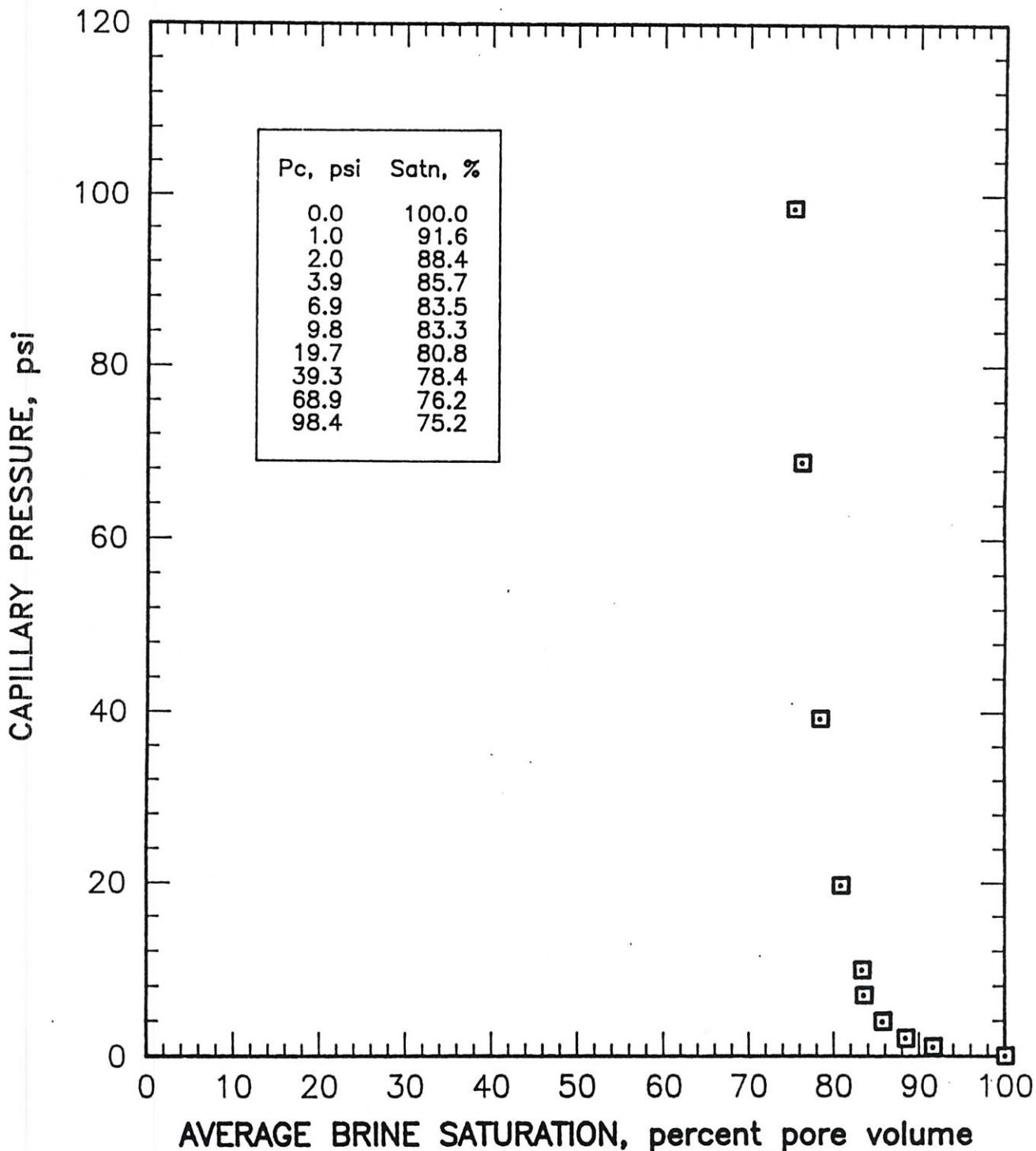
Depth:

3281.00 ft.

Sample No.: 2CP

Client: San Joaquin Energy Consultants, Inc.

CENTRIFUGAL CAPILLARY PRESSURE
AIR-BRINE SYSTEM @ 73°F
UNSMOOTHED DATA



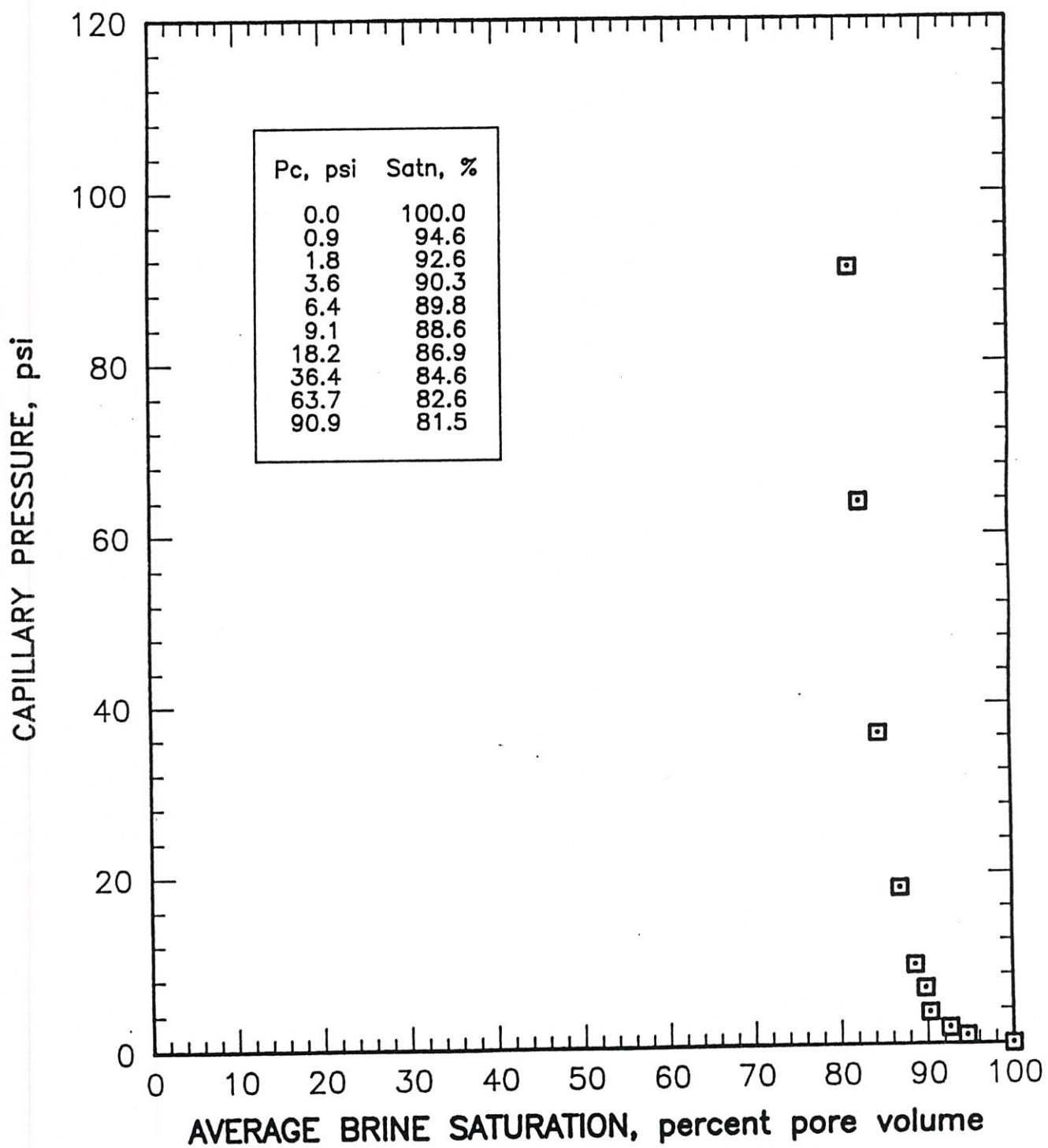
PETROLEUM TESTING SERVICE, INC.

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Date: December 1991
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Figure 3

Well: Red Ribbon WD-2
Field: Fruitvale
State: California
Depth: 3290.50 ft.
Sample No.: 3CP

Client: San Joaquin Energy Consultants, Inc.

CENTRIFUGAL CAPILLARY PRESSURE
AIR-BRINE SYSTEM @ 73°F
UNSMOOTHED DATA



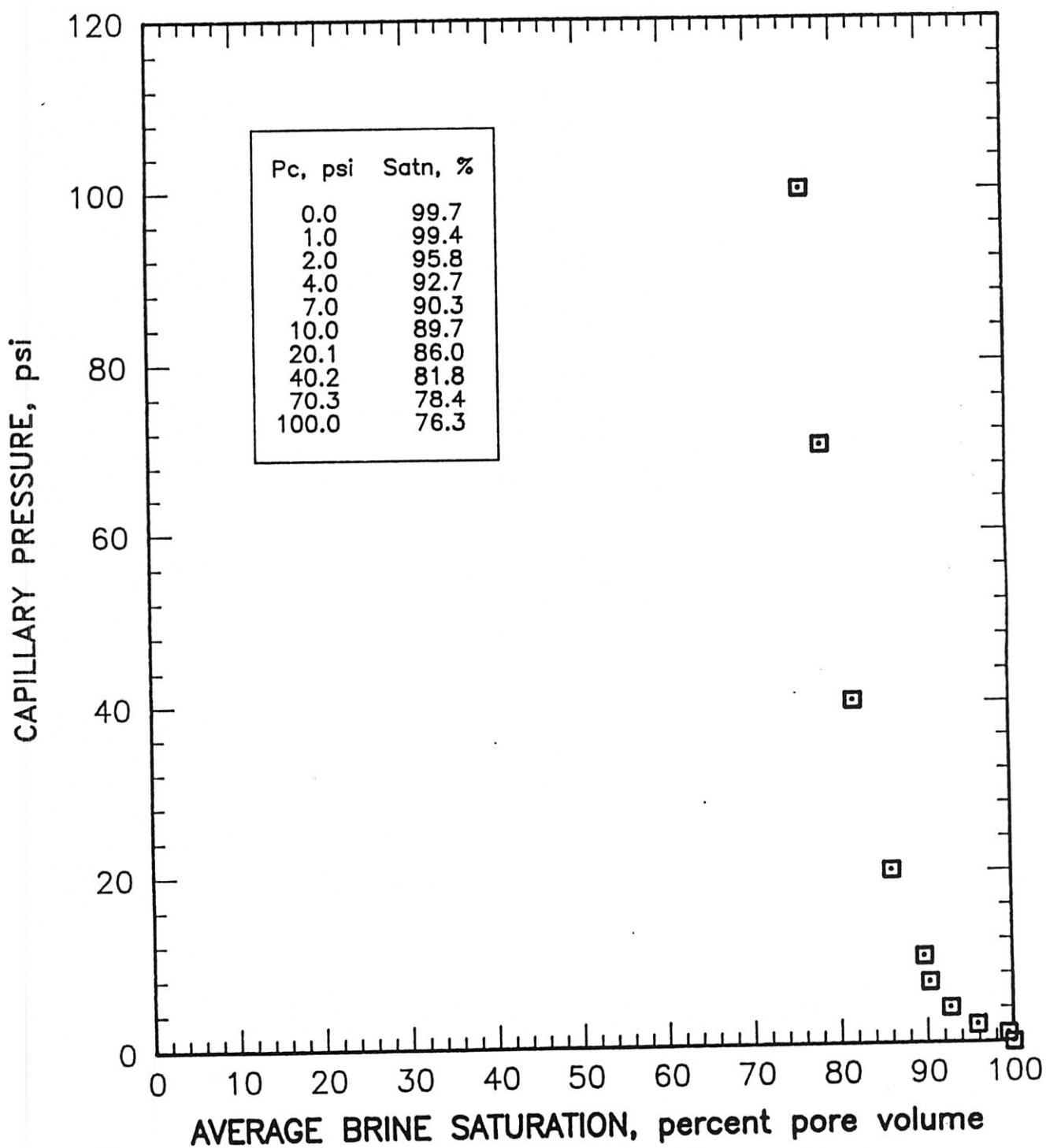
PETROLEUM TESTING SERVICE, INC.

File No.: 82656
Date: December 1991
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Figure 4

Well: Red Ribbon WD-2
Field: Fruitvale
State: California
Depth: 4696.10 ft.
Sample No.: 4CP

Client: San Joaquin Energy Consultants, Inc.

CENTRIFUGAL CAPILLARY PRESSURE
AIR-BRINE SYSTEM @ 73°F
UNSMOOTHED DATA



PETROLEUM TESTING SERVICE, INC.

File No.:
Date:

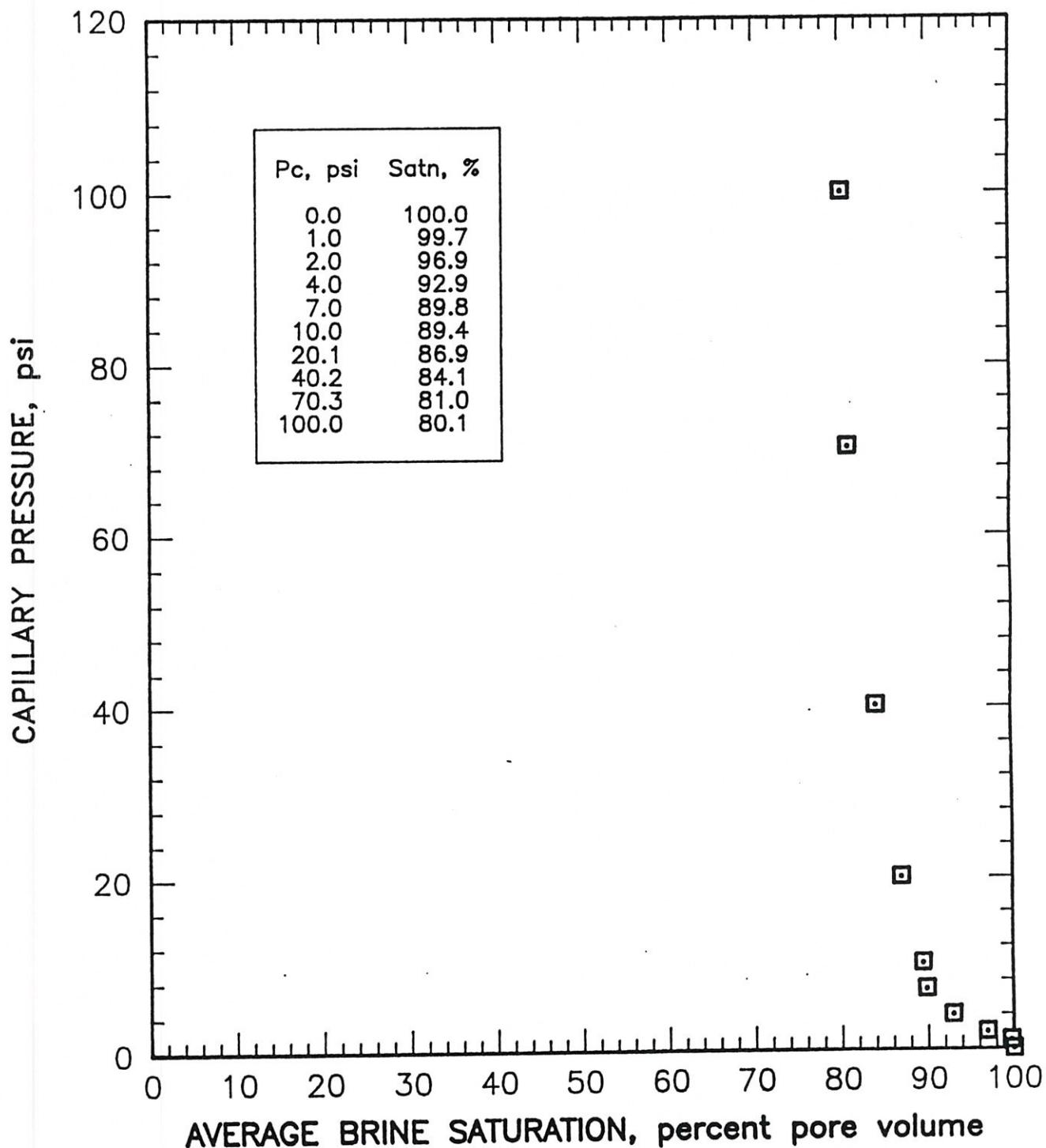
82656
December 1991

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Figure 5

Well: Red Ribbon WD-2
Field: Fruitvale
State: California
Depth: 4699.30 ft.
Sample No.: 5CP

Client: San Joaquin Energy Consultants, Inc.

CENTRIFUGAL CAPILLARY PRESSURE
AIR-BRINE SYSTEM @ 73°F
UNSMOOTHED DATA



PETROLEUM TESTING SERVICE, INC.

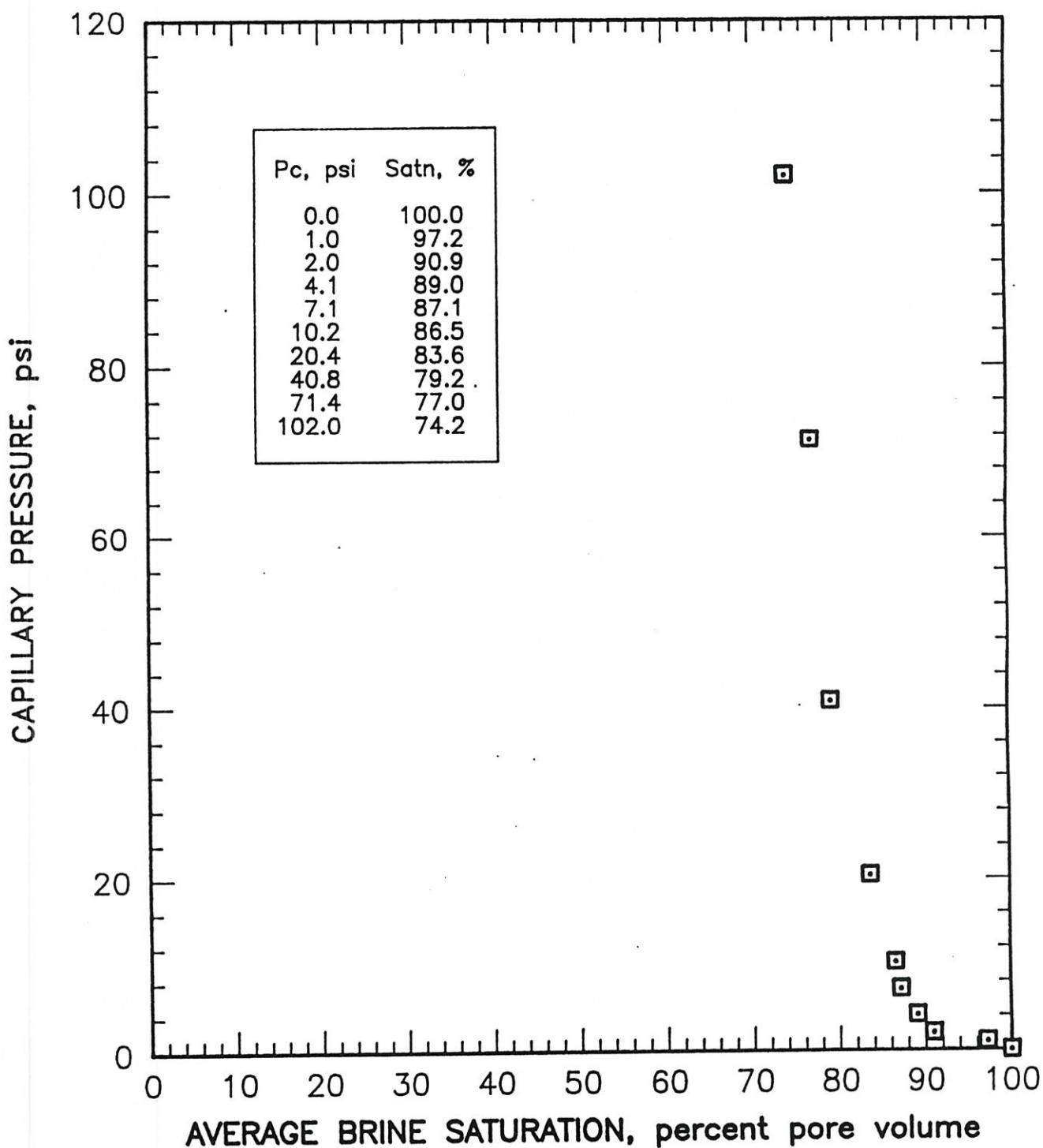
File No.: 82656
Date: December 1991

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Figure 6

Well: Red Ribbon WD-2
Field: Fruitvale
State: California
Depth: 4701.20 ft.
Sample No.: 6CP

Client: San Joaquin Energy Consultants, Inc.

CENTRIFUGAL CAPILLARY PRESSURE
AIR-BRINE SYSTEM @ 73°F
UNSMOOTHED DATA



PETROLEUM TESTING SERVICE, INC.

File No.:
Date:

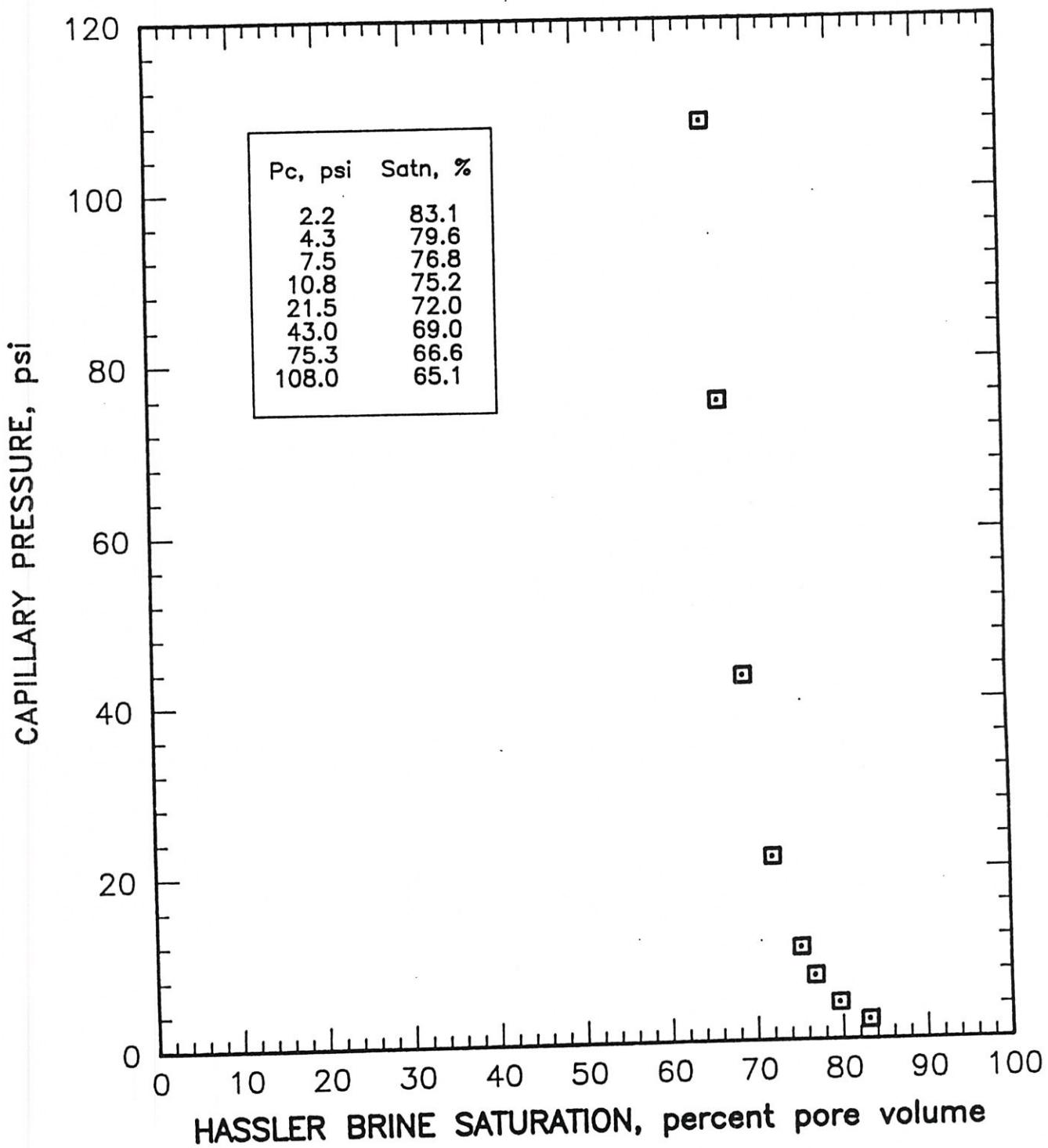
82656
December 1991

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Figure 7

Well: Red Ribbon WD-2
Field: Fruitvale
State: California
Depth: 3278.80 ft.
Sample No.: 1CP

Client: San Joaquin Energy Consultants, Inc.

CENTRIFUGAL CAPILLARY PRESSURE
AIR-BRINE SYSTEM @ 73°F
HASSELERIZED DATA



PETROLEUM TESTING SERVICE, INC.

File No.:
Date:

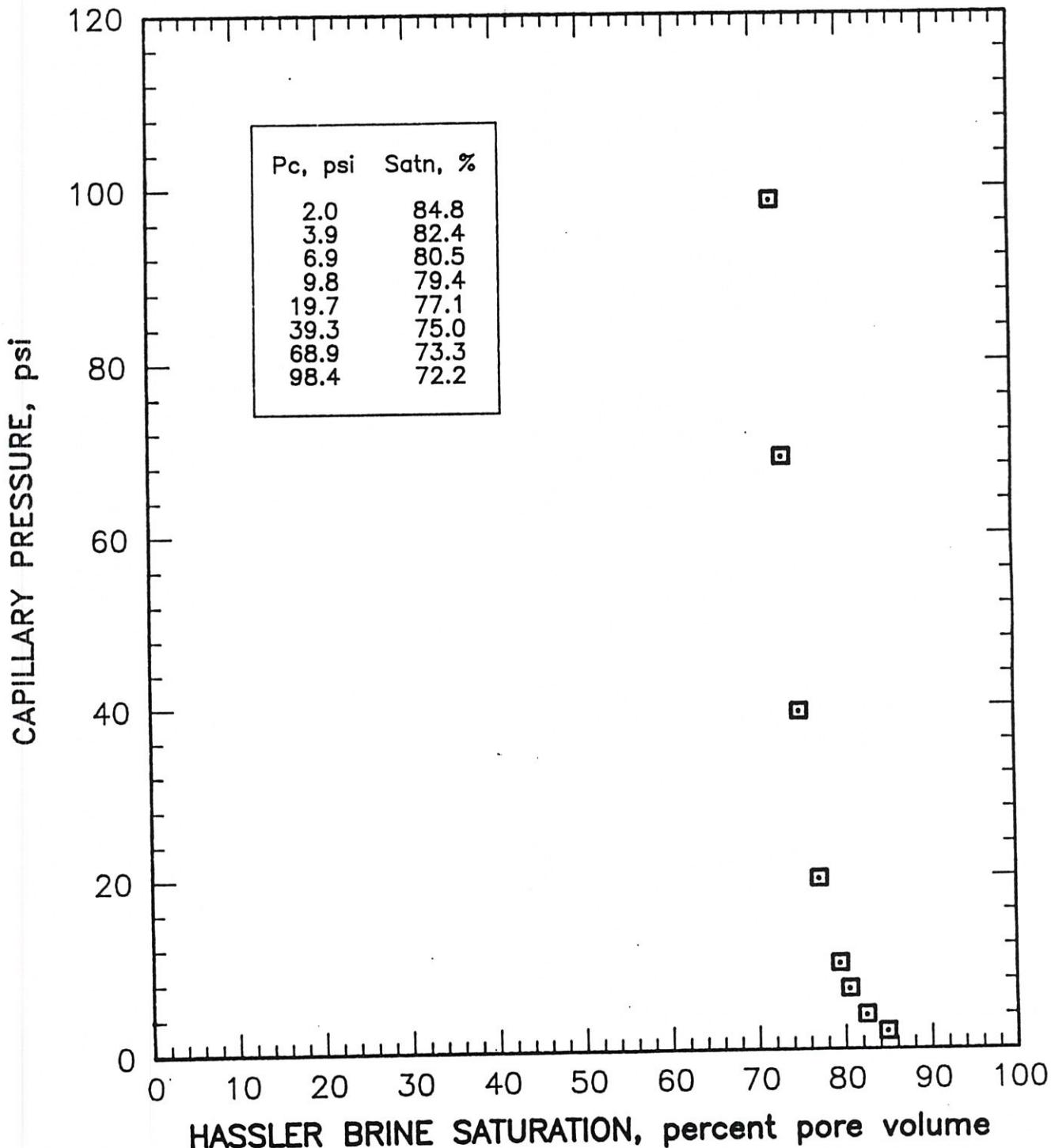
82656
December 1991

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Figure 8

Well: Red Ribbon WD-2
Field: Fruitvale
State: California
Depth: 3281.00 ft.
Sample No.: 2CP

Client: San Joaquin Energy Consultants, Inc.

CENTRIFUGAL CAPILLARY PRESSURE
AIR-BRINE SYSTEM @ 73°F
HASSELERIZED DATA



PETROLEUM TESTING SERVICE, INC.

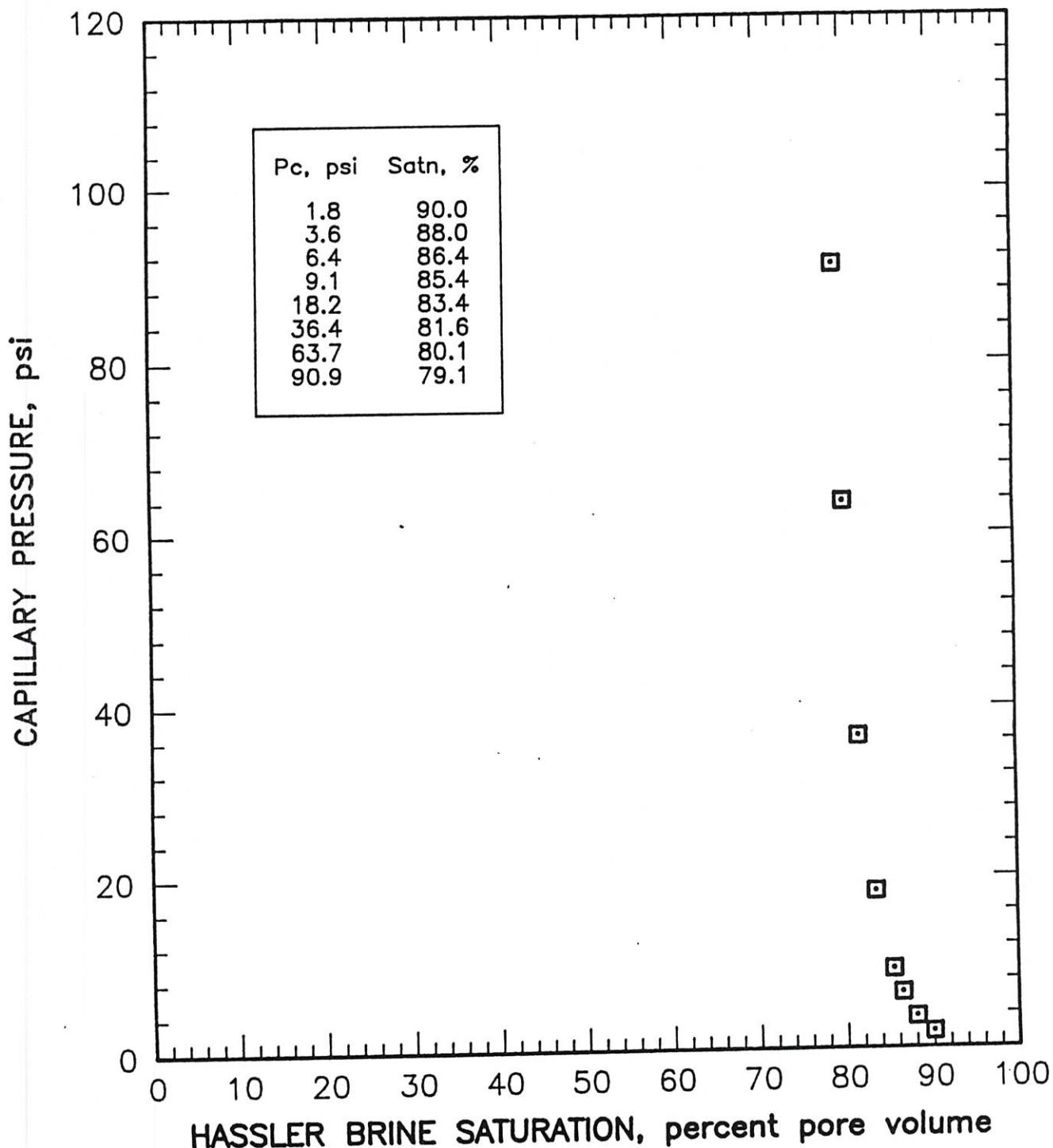
File No.: 82656
Date: December 1991

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Figure 9

Well: Red Ribbon WD-2
Field: Fruitvale
State: California
Depth: 3290.50 ft.
Sample No.: 3CP

Client: San Joaquin Energy Consultants, Inc.

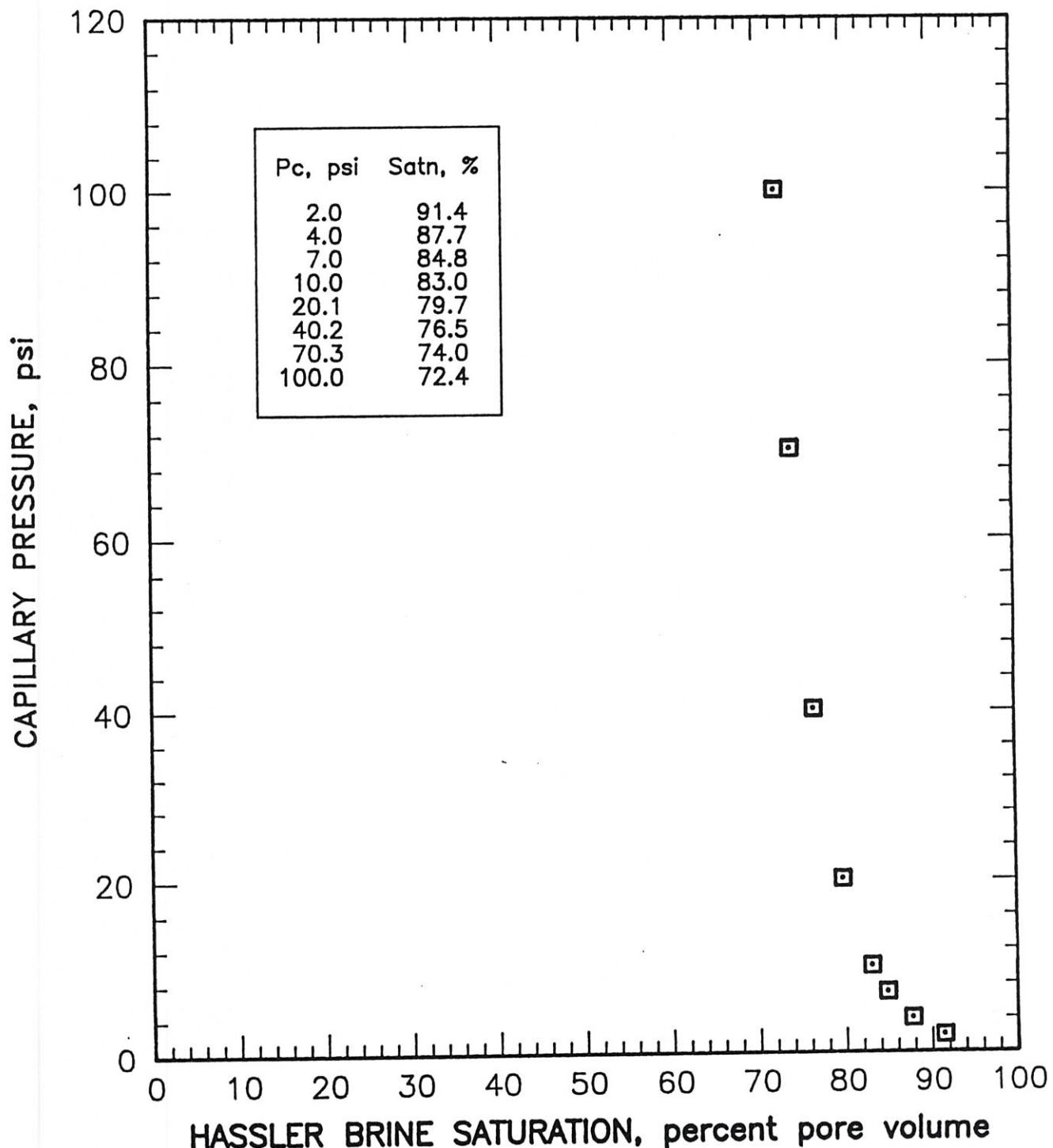
CENTRIFUGAL CAPILLARY PRESSURE
AIR-BRINE SYSTEM @ 73°F
HASSELERIZED DATA



Well: Red Ribbon WD-2
Field: Fruitvale
State: California
Depth: 4696.10 ft.
Sample No.: 4CP

Client: San Joaquin Energy Consultants, Inc.

CENTRIFUGAL CAPILLARY PRESSURE
AIR-BRINE SYSTEM @ 73°F
HASSLERIZED DATA



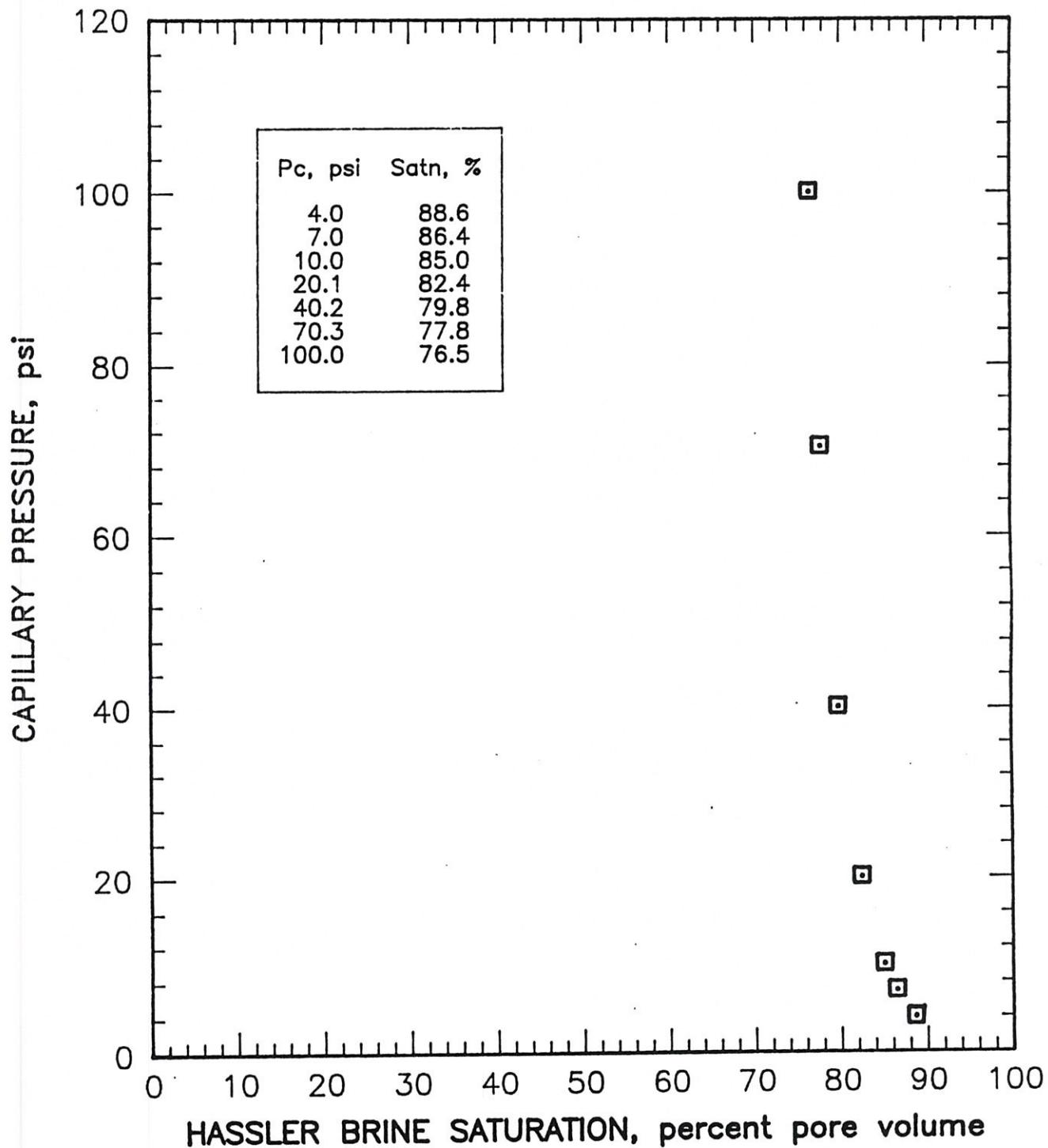
PETROLEUM TESTING SERVICE, INC.

File No.: 82656 Page 15
Date: December 1991 Figure 11

Well: Red Ribbon WD-2
Field: Fruitvale
State: California
Depth: 4699.30 ft.
Sample No.: 5CP

Client: San Joaquin Energy Consultants, Inc.

CENTRIFUGAL CAPILLARY PRESSURE
AIR-BRINE SYSTEM @ 73°F
HASSELERIZED DATA



Well: Red Ribbon WD-2
Field: Fruitvale
State: California
Depth: 4701.20 ft.
Sample No.: 6CP

Client: San Joaquin Energy Consultants, Inc.

CENTRIFUGAL CAPILLARY PRESSURE
AIR-BRINE SYSTEM @ 73°F
HASSLERIZED DATA

